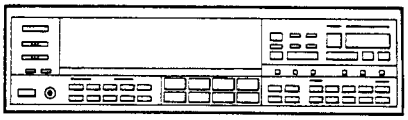
PIONEER

Service Manual

CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS



ORDER NO.
ARP1241-A

AUDIO/VIDEO STEREO RECEIVER

VSX-5000(BK)

MODEL VSX-5000(BK) COMES IN TWO VERSIONS DISTINGISHED AS FOLLOWS:

Type	Power requirement	Export destination
KUC	AC120V only	U.S.A and Canada
S/G	AC110V, 120V, 220V, 240V (Switchable)	U.S.Military

- This service manual is applicable to the KUC and S/G types.
- As to the S/G type, please refer to pages 77.

CONTENTS

1. SAFETY INFORMATION 2
2. SPECIFICATIONS 3
3. REMOTE CONTROL UNIT OPERATION. 4
4. FRONT PANEL FACILITIES 5
5. REAR PANEL FACILITIES 7
6. DISASSEMBLY 9
7. PACKING 11
8. EXPLODED VIEW AND PARTS LIST 12
9. P.C. BOARDS CONNECTION DIAGRAM 15
10. SCHEMATIC DIAGRAM 23
11. ELECTRICAL PARTS LIST 31
12. BLOCK DIAGRAM 36
13. TROUBLE SHOOTING 38
14. SIGNAL RUTE. 44
15. CIRCUIT DESCRIPTIONS 46
16. ADJUSTMENTS. 68
17. REMOTE CONTROL UNIT 74
18. FOR S/G TYPE 77

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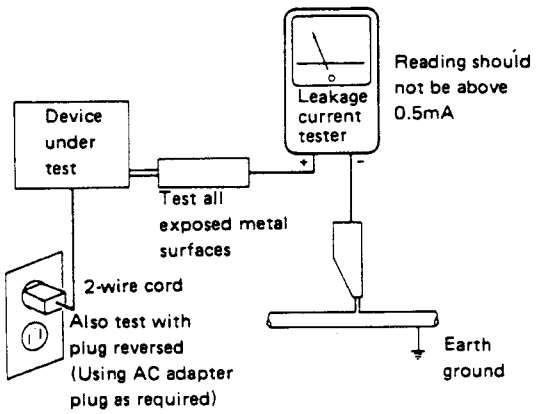
1. SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Reading should not be above 0.5mA
Leakage current tester
Device under test
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

2. SPECIFICATIONS

Amplifier section

[POWER IN] STEREO MODE

Continuous average power output is 100 watts* per channel, min., at 8 ohms from 20 Hertz to 20,000 Hertz with no more than 0.005% total harmonic distortion.**

[POWER IN] SURROUND MODE

Continuous power output (both channels driven)
Front channel:
20 Hz — 20 kHz, T.H.D. 0.005%, 8 Ω ..... 70 W + 70 W
Surround channel:
20 Hz — 15 kHz, T.H.D. 0.3%, 8 Ω ..... 15 W + 15 W
Continuous output power: 1 kHz, 0.3%, 8 Ω .... 18 W + 18 W
Input (sensitivity/impedance)
PHONO ..... 2.5 mV/50 kΩ
CD, TAPE, VCR 1, VCR 2, VDP ..... 150 mV/30 kΩ
POWER INPUT: FRONT ..... 1 V/50 kΩ
POWER INPUT: SURROUND ..... 150 mV/50 kΩ
Damping factor
1 kHz, 8 Ω 55
Phono overload level (T.H.D. 0.03% 1,000 Hz)
PHONO ..... 140 mV
Cartridge load capacity/load resistance
PHONO ..... 220 pF/50 kΩ
Frequency Response
PHONO, 20 Hz — 20 kHz ..... ±0.3 dB
CD, TAPE, VCR 1, VCR 2, VDP, 5 Hz — 100 kHz ..... $\pm^{0}_{3}$ dB
VDP IN → SURROUND OUT (at DOLBY SURROUND)
30 Hz — 7 kHz ..... $\pm^{0}_{3}$ dB
Output (level/impedance)
VCR REC, TAPE REC ..... 150 mV/4.7 kΩ
PREAMP OUT: FRONT ..... 1 V/470 Ω
PREAMP OUT: SURROUND ..... 150 mV/470 Ω
L + R ..... 1 V/4.7 kΩ
Tone control
BASS, 100 Hz ..... ±8 dB
TREBLE, 10 kHz ..... ±8 dB
VCR NOISE FILTER ..... 50 Hz, 5 kHz: −6 dB/oct
Muting ..... − ∞
Loudness contour ..... +6 dB (100 Hz), +3 dB (10 kHz)
Channel separation
PHONO ..... 65 dB/1 kHz
CD, TAPE, VCR 1, VCR 2, VDP ..... 65 dB/1 kHz
Signal to noise ratio (IHF, short circuited A network)
PHONO ..... 83 dB
CD, TAPE, VCR 1, VCR 2, VDP ..... 98 dB
Signal to noise ratio [EIA, at 1 W (1 kHz)]
PHONO ..... 77 dB
CD, TAPE, VCR 1, VCR 2, VDP ..... 79 dB
Distortion (SURROUND)
1 kHz, VDP IN → SURROUND OUT (at DOLBY SURROUND) 1%
SPEAKER ..... OFF, A, B, A parallel B
Speaker impedance ..... 4 — 16 Ω

VIDEO Section

Input (Level/Impedance)
VCR 1, VCR 2, VDP/VCR 3, ADAPTOR ..... 1 Vp-p/75 Ω
Output (Level/Impedance)
VCR 1, VCR 2, ADAPTOR, MONITOR ..... 1 Vp-p/75 Ω
Frequency Response
VCR 1, VCR 2, VDP/VCR 3, ADAPTOR, MONITOR ..... 5 Hz — 6 MHz ($\pm^{0}_{3}$ dB)
Signal to noise ratio ..... 55 dB
Cross talk ..... 55 dB (3.58 MHz)
Enhancer (DETAIL) ..... 2 MHz $\pm^{3}_{4}$ dB
A video adaptor is provided only on the VSX-5000. It is not provided on the VSX-4000.

FM Tuner Section

Frequency range ..... 87.5 MHz — 108 MHz
Usable sensitivity ..... Mono; 10.8 dBf, IHF (0.95 μV/75 Ω)
50 dB Quieting sensitivity ..... Mono; 15.3 dBf, (1.6 μV/75 Ω)
Stereo; 37.1 dBf, (19.5 μV/75 Ω)
Signal to noise Ratio ..... Mono; 80 dB (65 dBf)
Stereo; 75 dB (85 dBf)
Distortion ..... Mono; 0.08% (100 Hz)
0.08% (1 kHz)
0.2% (6 kHz)
Stereo; 0.2% (100 Hz)
0.15% (1 kHz)
0.3% (6 kHz)
Capture ratio ..... 1 dB
Alternate channel selectivity ..... 65 dB (400 kHz)
Stereo separation ..... 50 dB (1 kHz)
35 dB (30 Hz — 15 kHz)
Frequency response ..... 30 Hz — 15 kHz ($\pm^{0.5}_{2}$ dB)
Image interference ratio ..... 50 dB
IF interference ratio ..... 80 dB
AM suppression ratio ..... 55 dB
Spurious interference ratio ..... 70 dB
Antenna input
A ..... 300 Ω BAL/75 Ω UNBAL F-type connector
B (CATV) ..... 75 Ω UNBAL F-type connector

AM Tuner Section

Frequency range .....
When 10 kHz step: 530 kHz — 1,600 kHz
When 9 kHz step: 531 kHz — 1,602 kHz
Sensitivity (IHF, Loop antenna) ..... 300 μV/m
Selectivity ..... 20 dB
Signal to noise ratio ..... 50 dB (100 dB μV/m)
Image interference ratio ..... 45 dB
IF interference ratio ..... 70 dB
Antenna ..... Loop antenna

Miscellaneous

Power requirements
U.S., Canadian models ..... AC 120 V, 60 Hz
Other destination models ..... AC 110/120/220/240 V (switchable), 50/60 Hz
Power consumption
U.S., Canadian models ..... 380 W, 470 VA
Other destination models ..... 380 W
In stand-by condition ..... 5 W
AC Outlets
SWITCHED x 2 ..... TOTAL 300 W MAX
UNSWITCHED x 1 ..... 200 W MAX
Dimensions ..... 420 (W) x 124 (H) x 381 (D) mm
16-9/16 (W) x 4-3/4 (H) x 14-15/16 (D) in
Weight (without package) ..... 10 kg (22 lb 1 oz)

Furnished Parts

FM T-type antenna 1
AM Loop antenna 1
Dry cell battery 2
Remote control unit 1
Operating instructions 1

NOTE:
Specifications and the design subject to possible modifications without notice due to improvements.

3. REMOTE CONTROL UNIT OPERATION

In addition to the present unit, the remote control unit can also be used to operate other Pioneer components (TV, VCR, VDP or CD) bearing the SR mark.

SLEEP key
Press to enable the sleep timer function. Each time you press the key, the timer function becomes 60 minutes, 30 minutes, or OFF, in that sequence.
When the SLEEP display is fully lit, this means 60 minutes, when it is half lit, this means 30 minutes, and when it is out, this means OFF.

VCR power key
Use to turn power ON/OFF to a VCR.

A/V selector switch

TV power key
Use to turn power ON/OFF to a TV.

VIDEO SELECTOR key

SURROUND VOLUME key
(functions only with the VSX-5000)

BALANCE key

MASTER VOLUME key

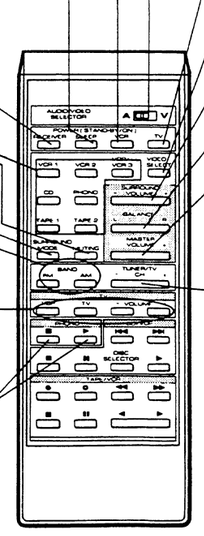
RECEIVER power stand-by/on key

Audio/Video Function keys

MUTE key

SURROUND MODE key

FM/AM selecor keys



TV keys
VDP ... Sets the TV set function to VDP.
TV ... Sets the TV set function to TV.
− ... Reduces the TV set's sound volume.
+ ... Increases the TV set's sound volume.

PHONO keys
► **(PLAY)** ... To begin record playback.
■ **(STOP)** ... To stop record playback.

TUNER CH key
(When the A/V selector is "**A**")
The station which is memorized in the STATION CALL switch will be received.
+ : By pressing this switch, the channel number of the STATION CALL switch will increases.
− : By pressing this switch, the channel number of the STATION CALL switch will decrease.

NOTE:
Unless the FM or AM function is selected using the BAND selector keys, you cannot receive a broadcast.

TV CH key
(When the A/V selector is "**V**")
+: Selects channels in ascending order.
−: Selects channels in descending order.

SURROUND MODE key
[When controlling the VSX-5000]
Selects the surround mode. Each time the key is pressed, the function is switched in the following order:

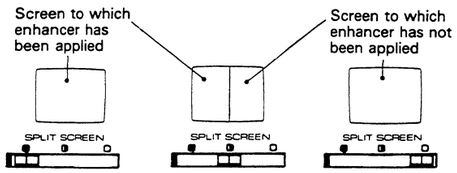
→ STUDIO → STADIUM → DOLBY SURROUND → OFF

[When controlling the VSX-4000]
Selects the SURROUND mode. Each time the key is pressed, the function is switched in the following order:

→ SIMULATED STEREO → STEREO WIDE → SIMULATED STEREO & STEREO WIDE → OFF

4. FRONT PANEL FACILITIES

SPLIT SCREEN control
This control allows you to freely control the area of enhanced picture (on right side of screen) and original picture (non-enhanced, on left side of screen) by means of a vertical line dividing the screen into two sections.


Screen to which enhancer has been applied
Screen to which enhancer has not been applied
SPLIT SCREEN
SPLIT SCREEN
SPLIT SCREEN

NOTE:
This line is not output from the VCR (VCR 1 and VCR 2) VIDEO OUT jacks. As a result, the split screen image is not recorded; the recorded image will be entirely that produced by the enhancer function.

ENHANCER control
When performing tape copying with a VCR, some deterioration in image quality occurs normally. This control allows compensation for this deterioration in image quality by emphasizing image detail.

NOTE:
The ENHANCER control functions to suppress image deterioration, but will not improve image quality beyond its original state.

SPEAKERS switches
These switches are used to select the speakers used.
A: To use the speakers connected to the SPEAKERS A terminals.
B: To use the speakers connected to the SPEAKERS B terminals.
When perform surround reproduction, press both of switches A and B.

NOTE:
No sound will be heard through the speakers when both the A and B switches are depressed if only one set of speakers has been connected to either the A or B SPEAKERS terminals.

POWER STAND-BY/ON switch
When this switch is pressed, power is supplied to the unit. Press the switch again to turn power off.

[Timer ON/OFF possible]
When the unit is switched ON, ON/OFF control can be performed by means of the optional timer.

NOTE:
When the power is turned ON, muting will be applied to prevent sound from being output while the volume level indicator is flashing (about 5 seconds).

SURROUND mode switches *
Set in accordance with the music source used when performing surround playback.
OFF: Press when not performing surround playback.
STUDIO: Optimum when watching movie or concert programs.
STADIUM: Optimum when watching live sports programs.
DD SURROUND: Optimum when watching movie programs bearing the DOLBY STEREO trademark.

NOTE:
- *When the rear panel SURROUND ON/OFF selector switch is in the OFF position, no surround effect will be produced even if these switches are pressed.*

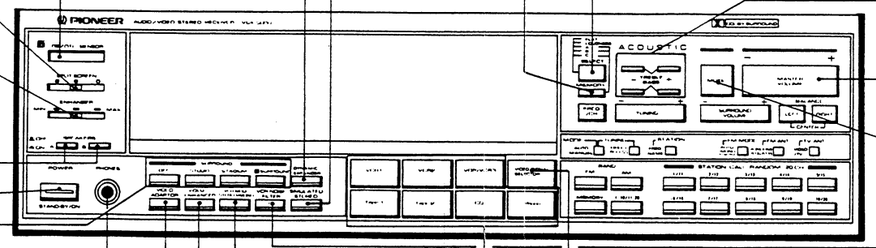
SIMULATED STEREO switch *
Press to produce a simulated stereo effect when listening to monaural sources (for example normal AM or TV broadcasts). "S/STEREO" appears on the display panel.

NOTE:
- *ON the VSX-5000, this effect is not produced through the surround speakers.*

DYNAMIC EXPANDER switch *
Press to add impressive dynamicity to rock or jazz music sources.

NOTE:
This effect is not produced through the surround speakers.

Remote signal sensor



PHONES jack
Connect the plug on your headphones to this jack. To listen to a program through the headphones, set both SPEAKERS A and B switches to the OFF position.

VIDEO ADAPTOR switch *
Press when using the video component connected to the VIDEO ADAPTOR jacks.

VIDEO ENHANCER switch *
Press when performing video copying with added video enhancer effects. When the switch is pressed, the monitored video image will be the split screen picture.

VCR MODE STEREO/MONO selector switch *
MONO: All playback, including stereo signals, are produced in monaural.
When the MODE MONO indicator lights, the unit is set to the MONO mode.

NOTE:
This switch can be used when one of the video system function switches is selected. In addition, this switch can be preset for either of VCR 1, VCR 2, or VDP/VCR 3. When any other function switch is pressed, the mode mono is automatically canceled.

ACOUSTIC MEMORY switch *
Use to set sound quality to three different settings (A, B, or C). This function allows you to preset and quickly recall frequently used tone settings.

ACOUSTIC SELECT switch *
Each time this switch is pressed, acoustic effects are produced in the following order:

→ FLAT → LOUDNESS → A → B → C →

FLAT: For flat (normal) frequency response.
LOUDNESS: Emphasizes the low- and high-frequency ranges. Produces a fuller sense of sound particularly when listening at low volumes.
A, B or C: Produces the sound tone preset with the ACOUSTIC MEMORY switch.

VIDEO SIGNAL SELECTOR switch
When recording simulcast programs, the recorded image can be selected from among VCR 1, VCR 2, and VDP/VCR 3.

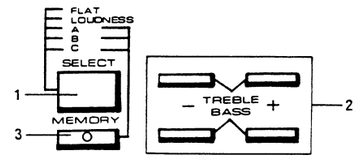
Audio/video function switches *
VCR 1: Press when performing playback on a VCR unit.
VCR 2: Press when performing playback on a second VCR unit.
VDP/VCR 3: Press when performing playback on a video disc player (VDP) or third VCR.
TAPE 1: Press when performing playback on a tape deck and when monitoring recording.
TAPE 2: Press when performing playback on a second tape deck and when monitoring recording.

This receiver has two sets of tape terminals, allowing you to connect two tape decks for both recording and playback.

NOTE:
If TAPE 1 and TAPE 2 are pressed simultaneously, TAPE 2 alone will function.

CD: Press when playing compact discs on a CD player.
PHONO: Press when playing records on a turntable.

Presetting the Acoustic Memory



1. Use the ACOUSTIC SELECT switch to select the desired memory position (A, B, or C).
2. Use the BASS/TREBLE controls to adjust the sound to the desired tone quality.
3. Press the ACOUSTIC MEMORY switch.

- In this way, the desired tone will be preset in one of the three acoustic memory positions. To preset two other desired tone settings, perform the same operations.
- To recall the memorized tone settings, press the ACOUSTIC SELECT switch to select the desired memory position. In this way, three different tone settings can be preset and recalled in the three positions of the acoustic memory.

BASS/TREBLE controls
Use these controls to adjust the tone quality.
When both sides (±) of the BASS control are pressed simultaneously, the bass response will be set to the flat (normal) condition; likewise, when both sides (±) of the TREBLE control are pressed simultaneously, the treble response will be set to the flat (normal) condition.

MASTER VOLUME switch
Use to simultaneously adjust the sound volume from front and surround speakers. To increase sound volume, press the "+" side. To reduce sound volume, press the "–" side.
- The sound volume level is memorized even when the power is turned OFF. When the power is turned ON again, the volume will automatically return to the previously set level.

MUTE switch *
Press to temporarily cut off the sound volume. When pressed again, the sound will return to its previous level.

VCR NOISE FILTER switch *
If tape hiss noise is noticeable when performing playback of video cassette tapes, press this switch to reduce the noise.
By pressing this switch, "N FILTER" will appear on the display panel.

NOTE:
- *This switch can be used when one of the video system function switches is selected. In addition, this switch can be preset for either of VCR 1, VCR 2, or VDP/VCR 3. When any other audio function switch is pressed, the noise filter is automatically canceled.*
- *The effectiveness in reducing high-frequency hiss noise varies depending on the type of tape used, the recording level, and other conditions.*

5. REAR PANEL FACILITIES

FM/AM ANTENNA terminals
Use these antenna terminals for reception of normal FM and AM broadcasts.
- For details regarding antenna connection, see the section "Hints for Better Reception" on page 28.

ANTENNA FM-B (CATV) terminal
Use this antenna terminal for reception of CATV FM broadcasts. Connect a 75-ohm coaxial cable to this terminal.

INPUT jacks
PHONO ... Connect to the output cables from a turntable.
CD ... Connect to the output jacks of a compact disc player.

TAPE jacks
The REC/PLAY jack on the receiver consists of two sets, TAPE 1 and TAPE 2. It is possible to connect two tape decks to the receiver and do simultaneous recording or tape to tape recording. When connecting only one tape to the receiver, connect it to the TAPE 1 jack.

Connecting for Recording
The tape recording jack (TAPE REC) on the tape deck should be connected to the REC side of the TAPE jack on the receiver with a pin plug connecting cord.

Connecting for Playback
Connect the TAPE PLAY jack on the tape deck to the PLAY side of the TAPE jack on the receiver with a pin plug connecting cord.

GND terminal
Connect the ground lead of a turntable to this terminal.

VIDEO ADAPTOR jacks
Use to connect a video adaptor component such as a video enhancer or color corrector.

VDP/VCR 3 jacks
[VIDEO IN]
When watching the video image from a LaserVision player (VDP) or a VCR used for playback, connect its VIDEO OUTPUT jacks here.

[AUDIO IN (L, R)]
When playing back the audio channel from a LaserVision player (VDP) or a VCR for playback, connect its AUDIO OUTPUT jacks here.

VCR 2 jacks
[VIDEO OUT]
When copying program materials from the video component connected to the VCR 1 or VDP/VCR 3 jacks, connect to the VIDEO INPUT jacks of the VCR used for recording.

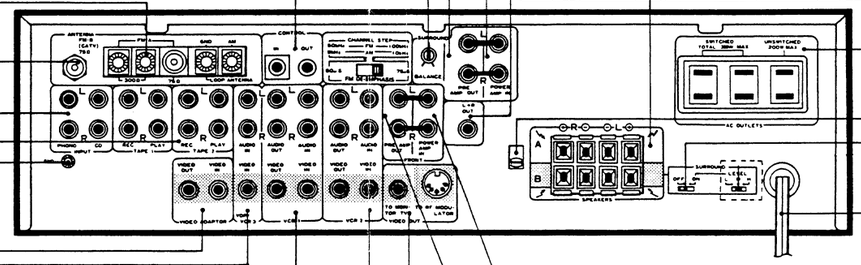
[AUDIO OUT (L, R)]
When copying program materials from the video component connected to the VCR 1 or VDP/VCR 3 jacks, or when recording music from an audio component source, connect to the AUDIO INPUT jacks of the VCR used for recording.

SURROUND POWER AMP IN jacks
When a separate pre-amplifier is connected and VSX-5000 is used as power amplifier for surround speakers, connect the pre-amplifier to these jacks.
(Standard input 150 mV, Impedance 50 kΩ)

SURROUND PRE-AMP OUT jacks
When a power amplifier is used to connect surround speakers, connect the power amplifier to these jacks.
(Standard output 150 mV, Impedance 470 Ω)

SURROUND BALANCE control
Use to adjust the surround effect from the surround speakers. Normally leave in the center position. When inputting a monaural signal, adjust so that the surround output is minimum.

REMOTE CONTROL IN/OUT jacks
IN: Connect this jack to other Pioneer components (main unit or remote control unit) when using those components to control this unit.
OUT: Connect this jack to other Pioneer components when using this unit's remote control to control the other components.



VCR 1 jacks
[VIDEO OUT]
When copying program materials from the video component connected to the VCR 2 or VDP/VCR 3 jacks, connect to the VIDEO INPUT jacks of the VCR used for recording.

[AUDIO OUT (L, R)]
When copying program materials from the video component connected to the VCR 2 or VDP/VCR 3 jacks, or when recording music from an audio component source, connect to the AUDIO INPUT jacks of the VCR used for recording.

[VIDEO IN]
When monitoring the video image from a VCR used for playing, connect its VIDEO OUTPUT jacks here.

[AUDIO IN (L, R)]
When monitoring back the audio channel from a VCR used for playing, connect its AUDIO OUTPUT jacks here.

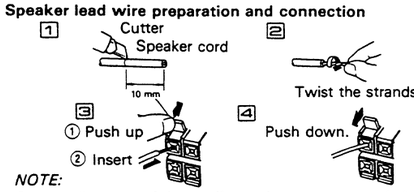
[VIDEO IN]
When monitoring the video image from a VCR used for copying, connect its VIDEO OUTPUT jacks here.

[AUDIO IN (L, R)]
When monitoring the audio channel from a VCR used for copying, connect its AUDIO OUTPUT jacks here.

L + R output jacks
These are the Dolby surround center channel signal output jacks. They can also be used as a 3D system MONO output.
(Standard output 1 V, output impedance 4.7 KΩ.)

SPEAKERS terminals
A: Connect to a first set of speakers (or the front speakers in a surround system).
B: Connect to a second set of speakers (or the surround speakers in a surround system).
- The words in parenthesis apply to when the SURROUND ON/OFF selector switch is ON.

Speaker lead wire preparation and connection



NOTE:
Do not allow any of the cord's conductors to protrude from the terminals or touch any other conductors. Malfunctioning or breakdowns may occur when conductors come into contact with each other.

FRONT POWER AMP IN jacks
When a separate pre-amplifier is connected and the VSX-5000 is used as power amplifier, connect the pre-amplifier to these jacks.
(Standard input 1 V, input impedance 50 kΩ)

FRONT PRE-AMP OUT jacks
When a separate power amplifier is used to connect the front speakers, connect the power amplifer to these jacks.
(Standard output 1 V, output impedance 470 Ω)

VIDEO OUT jacks
Use to connect a TV set for watching program materials from the VCR or VDP connected to this unit.

[TO MONITOR TV jack]
Connect to a monitor TV or to a TV set with video input terminals.

[TO RF MODULATOR jack]
Use to connect a normal TV set. When performing connections, the RF MODULATOR JA-RF5 (sold separately) is required. By connecting an RF modulator, video signals can be converted to VHF signals (U.S. channel 3 or 4), thus allowing this unit to be used to view the selected source on a normal television set.

NOTE:
A "normal TV set" as noted above is one for which RF connections alone are possible.

Power cord

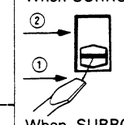
AC OUTLETS
(SWITCHED) TOTAL 300 W MAX
Power supplied through these outlets is turned on and off by the receiver's POWER switch. Total electrical power consumption of connected equipment should not exceed 300 W.

(UNSWITCHED) 200 W MAX
Power flows continually to this outlet, regardless of whether the receiver is switched ON or OFF. Electrical power consumption of the connected equipment should not exceed 200 W.
The equipment should be disconnected by removing the main plug from the wall socket when not in regular use, e.g. when on vacation.

NOTE:
Do not connect appliances with high power consumption such as heaters, irons, or television sets to the AC OUTLETS in order to avoid overheating or fire risk.
This can cause the receiver to malfunction.

SPEAKER IMPEDANCE selector switch
Set this switch to the nominal impedance of your speakers. When using surround speakers, or when two sets of speakers are used together, each set of speakers should have a nominal impedance of 8–16 ohms. When connecting surround speakers, always set to position ②.

When SURROUND ON/OFF selector switch is ON position:



Norminal speaker impedance	When using Surround Speaker
From 4 to less than 8 Ω	
From 8 to less than 16 Ω	Position ②
16 Ω	

When SURROUND ON/OFF selector switch is OFF position:

Nominal speaker impedance	One set of speakers (A or B) alone	Both sets of speakers together (A + B)
From 4 to less than 8 Ω.	Position ②	
From 8 to less than 16 Ω.	Position ①	Position ②
16 Ω	Position ①	Position ①

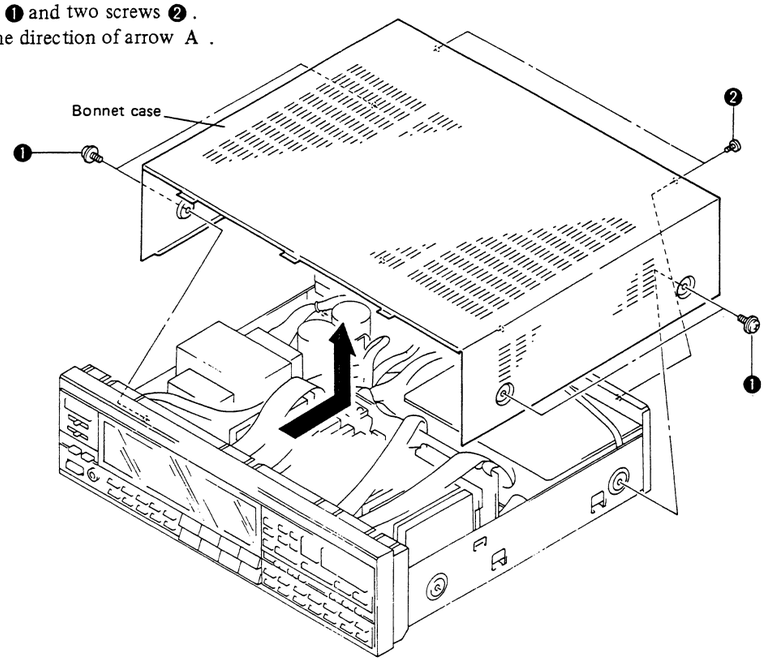
If speakers are used in ways other than those shown above, the speakers may not deliver proper output, or unnecessary heating may be caused.

SURROUND ON/OFF selector switch
When surround speakers are connected to the SPEAKER B terminals, set to the ON position; in all other cases, leave in the OFF position. When set to the ON position, the SURROUND mode can be selected with the unit's main controls or with the remote control unit.
Before operating this switch, read the explanation on the SPEAKER IMPEDANCE selector switch.

6. DISASSEMBLY

Removal of lamp box (1)

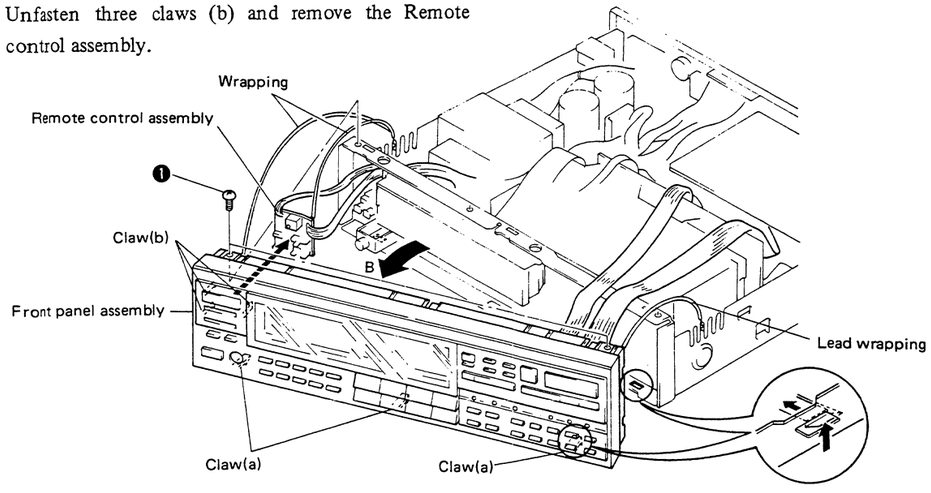
1. Remove four screws ❶ and two screws ❷ .
2. Remove bonnet in the direction of arrow A .



Removal of lamp box (2)

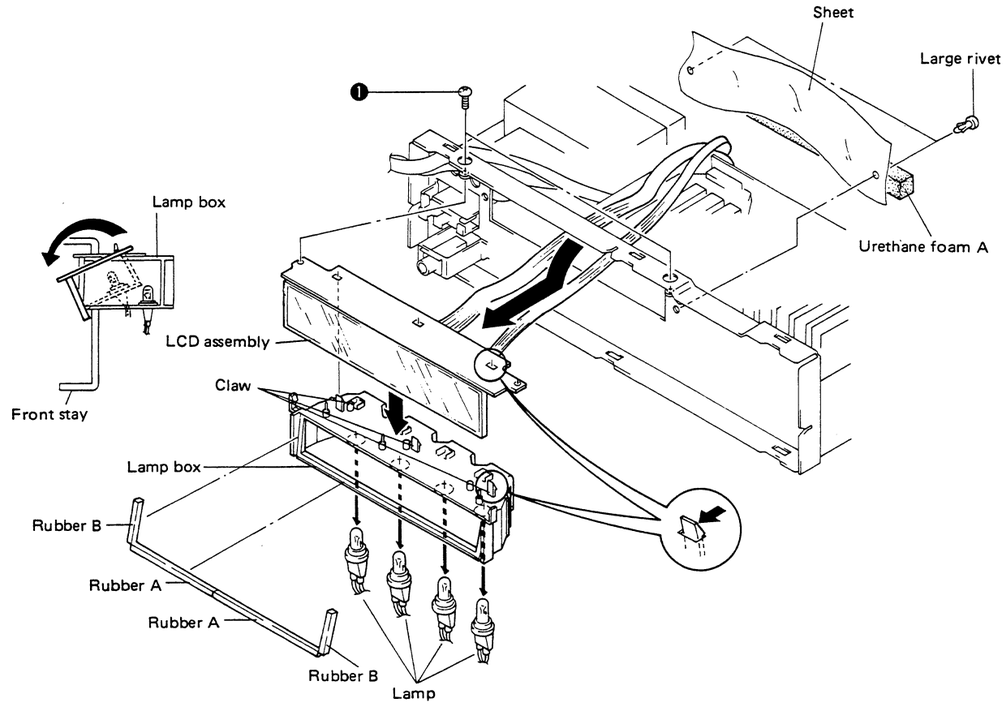
1. Remove two screws ❶ .
2. Unfasten three chaws (a) and open the front panel assembly in the direction of arrow B .
3. Unfasten three claws (b) and remove the Remote control assembly.

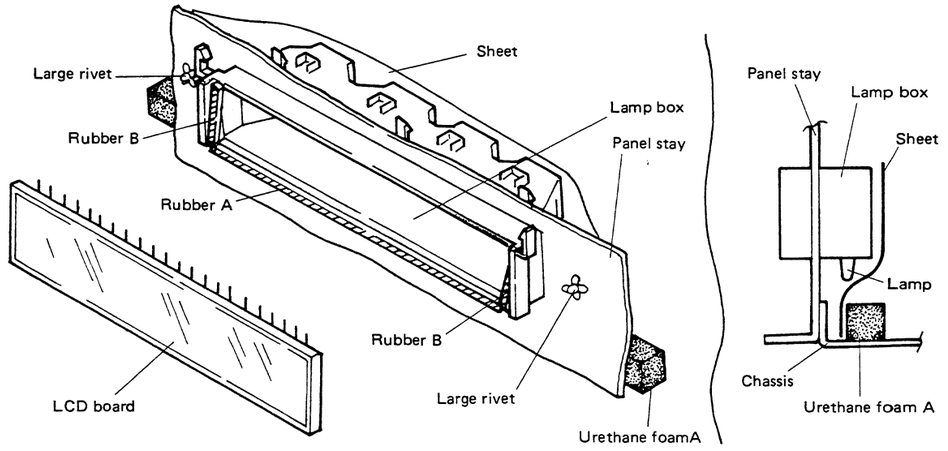
NOTE: The panel cannot be pulled out toward you. Remove the panel by turning it.



Removal of lamp box (3)

1. Remove two screws 1 and remove the LCD board in the direction of arrow.
2. Unfasten three claws and remove the lamp box.
3. Extract four lamps.

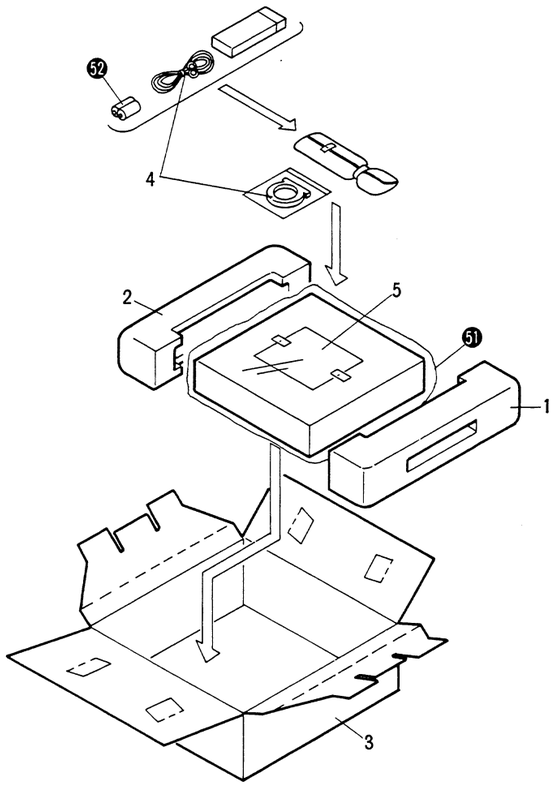




7. PACKING

Parts List

Mark	No.	Part No.	Description
	1	AHA1020	Front pad
	2	AHA1021	Rear pad
	3	AHD1104	Packing case
	4	AEA1003	Antenna set
	5	ARB1030	Operating instruction (ENGLISH)
	51		Packing sheet
	52		Battery assembly



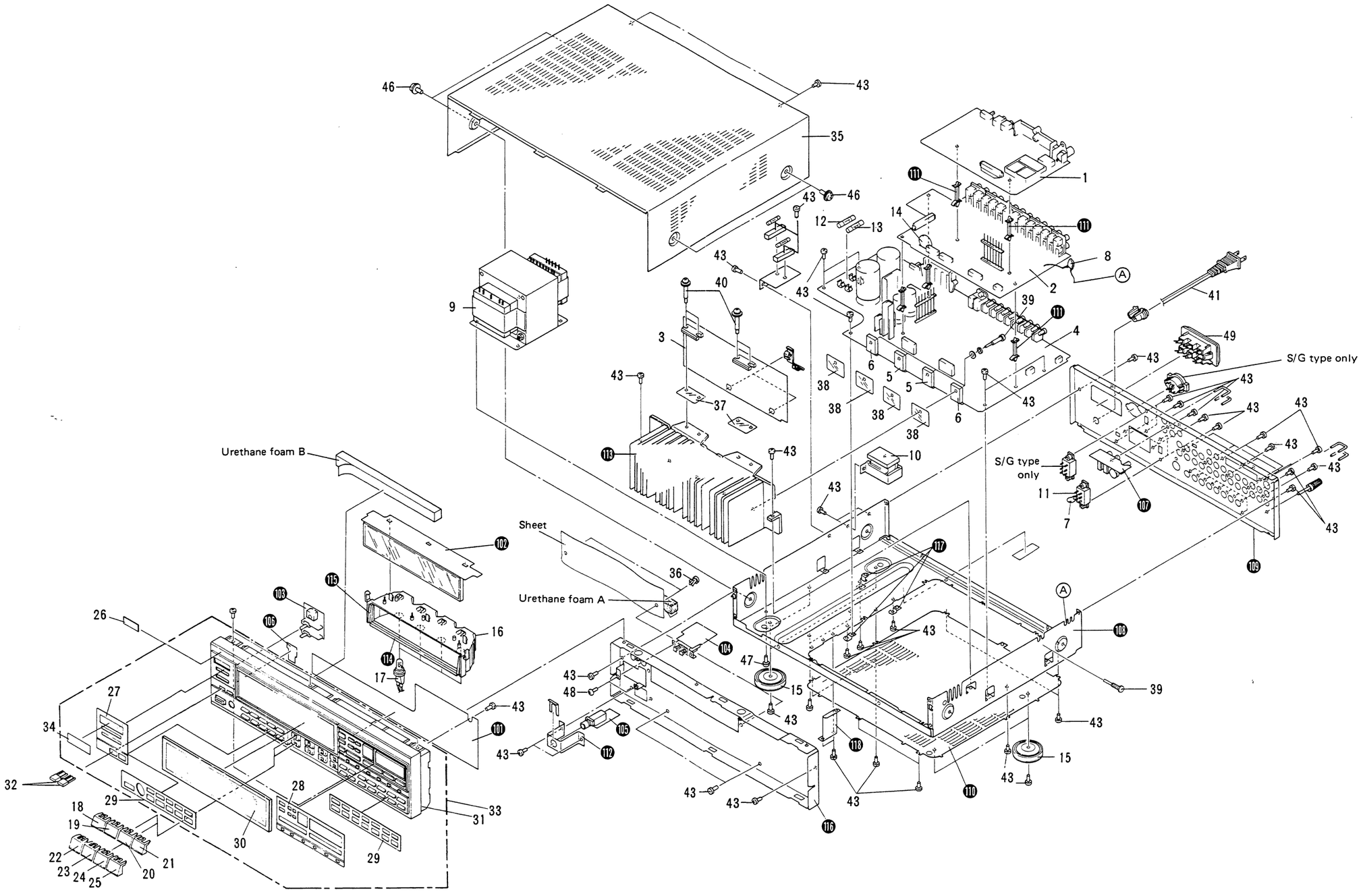
8. EXPLODED VIEW AND PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Parts List

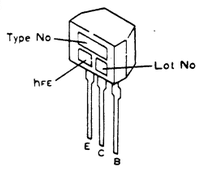
Mark	No.	Part No.	Description
	1	AWZ1093	Tuner assembly
	2	AWZ1094	Signal assembly
	3	AWZ1096	Surround assembly
	4	AWZ1097	AF Video assembly
⚠ ★★	5	2SA1302(A)	Transistor (Q1, Q3)
⚠ ★★	6	2SC3281(A)	Transistor (Q2, Q4)
⚠	7	ACG-019	Capacitor (0.01 μF/AC150V, C1)
	8	CKDYF473Z50	Ceramic capacitor (C2)
⚠ ★★	9	ATS1031	Power transformer (AC120V, T1)
⚠ ★★	10	ATT1016	Power transformer (AC120V, T2)
⚠ ★★	11	AKX1004	Speaker inpedance selector (S1)
⚠ ★★	12	AEK-304	Fuse (AC125V, 8A, FU1)
⚠ ★★	13	AEK-108	Fuse (AC125V, 5A, FU3, FU4)
	14	AEK-008	Battery
	15	AEP-251	Leg
	16	AMR1104	Lamp assembly
	17	AEL1020	Lamp with lead wire
	18	AAD1046	Knob A (VCR1)
	19	AAD1047	Knob B (VCR2)
	20	AAD1048	Knob C (VDP/VCR3)
	21	AAD1049	Knob D (VIDEO SIGNAL SELECTOR)
	22	AAD1050	Knob E (TAPE1)
	23	AAD1051	Knob F (TAPE2)
	24	AAD1052	Knob G (CD)
	25	AAD1053	Knob H (PHONO)
	26	AAH1005	Alminum panel LU
	27	AAH1015	Alminum panel LD
	28	AAH1007	Alminum panel RU
	29	AAH1016	Alminum panel RD
	30	AAK1117	Acrylic panel
	31	AAM-030	Function board
	32	AAY-157	Push knob (SPEAKERS)
	33	AMB1083	Front panel
	34	AMR1105	IR Filter
	35	ANE1043	Bonnet case
	36	AEC-898	Rivet
	37	AEP-057	Mica sheet
	38	ABA-313	Mica sheet
	39	ABA-176	Screw
	40	ABA-258	Screw
⚠	41	ADG-087	AC power cord
	42		------
	43	BBZ30P080FZK	Screw
	44		------
	45		------
	46	FBT40P080FZK	Screw
	47	VBZ40P080FMC	Screw
	48	VMZ30P060FMC	Screw
⚠	49	AKP-515 (AKP-504)	AC socket (AC OUTLET)
	101		Control assembly
	102		LCD assembly
	103		Remote control assembly
	104		SP.Switch assembly
	105		Head phone terminal assembly
	106		Power switch assembly
	107		Dolby balance assembly
	108		Chassis
	109		Rear panel
	110		Bottom plate
	111		P.C.B holder
	112		Head phone holder
	113		Heat sink
	114		Rubber (A)
	115		Rubber (B)
	116		Panel stay
	117		P.C.B holder
	118		Heat sink holder


S/G type only
S/G type only
Urethane foam B
Sheet
Urethane foam A

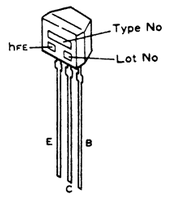
9. P.C. BOARD CONNECTION DIAGRAM

External Appearance of Transistor and ICs

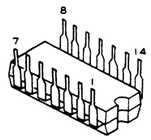
2SA933S
2SC1740S
2SC2668



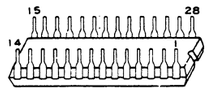
2SC2786



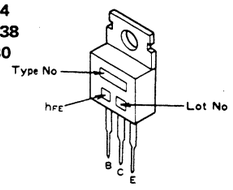
LA2730
PA0016
TC4066BP
TC4069UBP
μPD4066BC



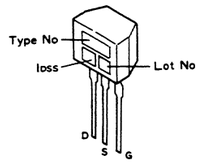
TC9163N



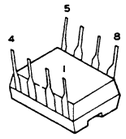
2SA968
2SB834
2SC2238
2SD880



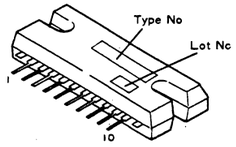
2SK161
2SK241-Y



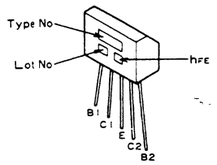
M5201P



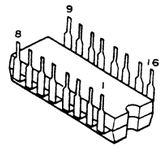
μPC1188H-P



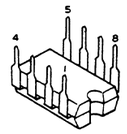
2SA979
2SC2259



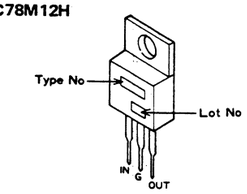
AN7470P
NE571
CX7978
LM7001



M5218PF
M5220P
M51848P
MN3007



μPC78M05H
μPC78M12H



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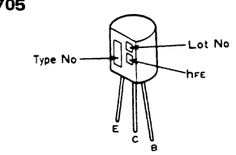
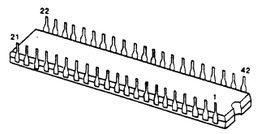
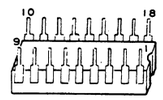
2SC2240
2SC2705



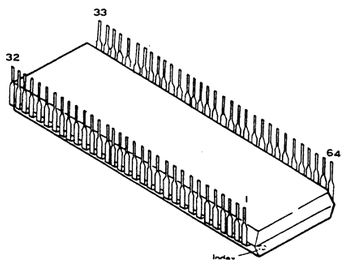
CX-789



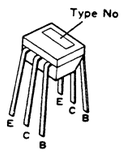
PD0012A



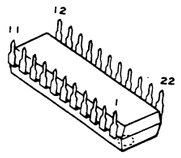
PD3068



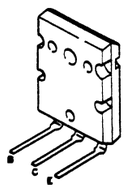
2SA1237



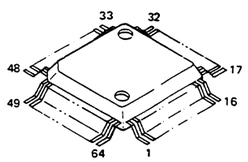
LA1265



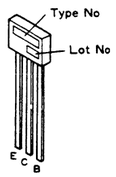
2SA1302(A)
2SC3281(A)

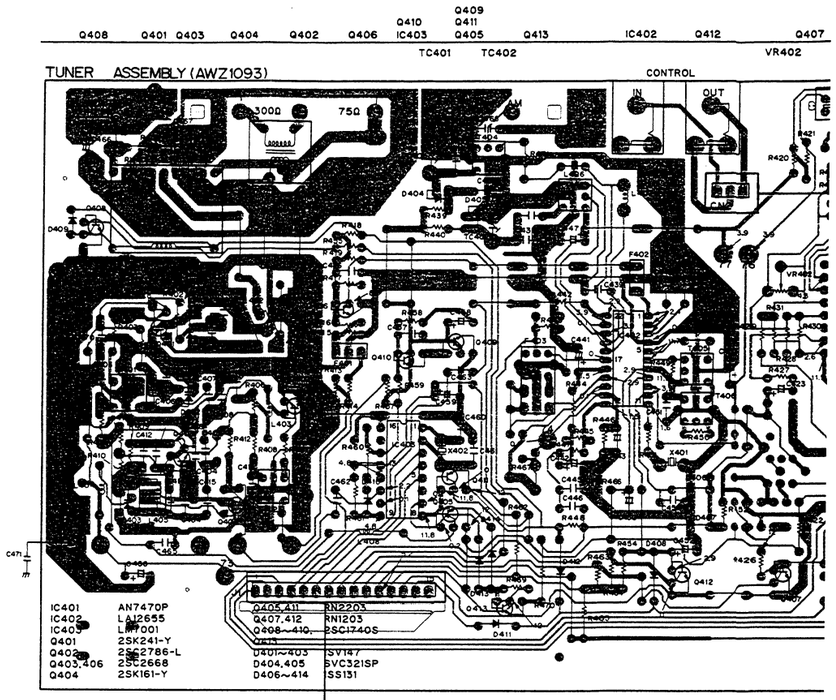


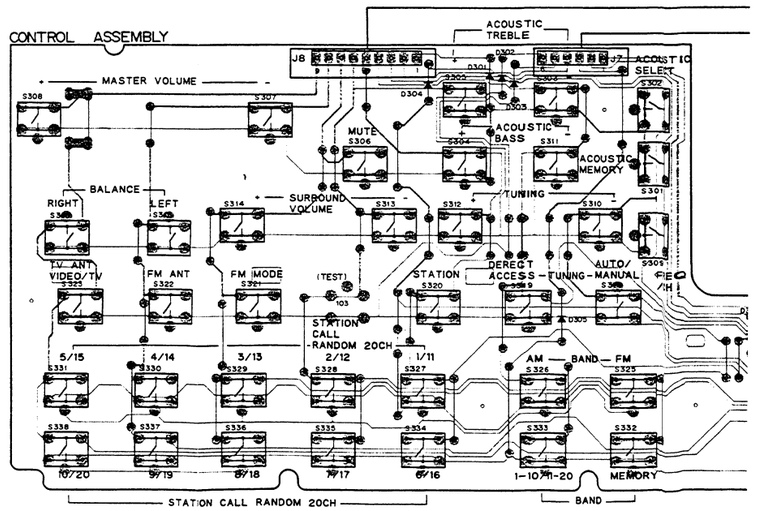
LA7580



RN1201
RN1203
RN2203



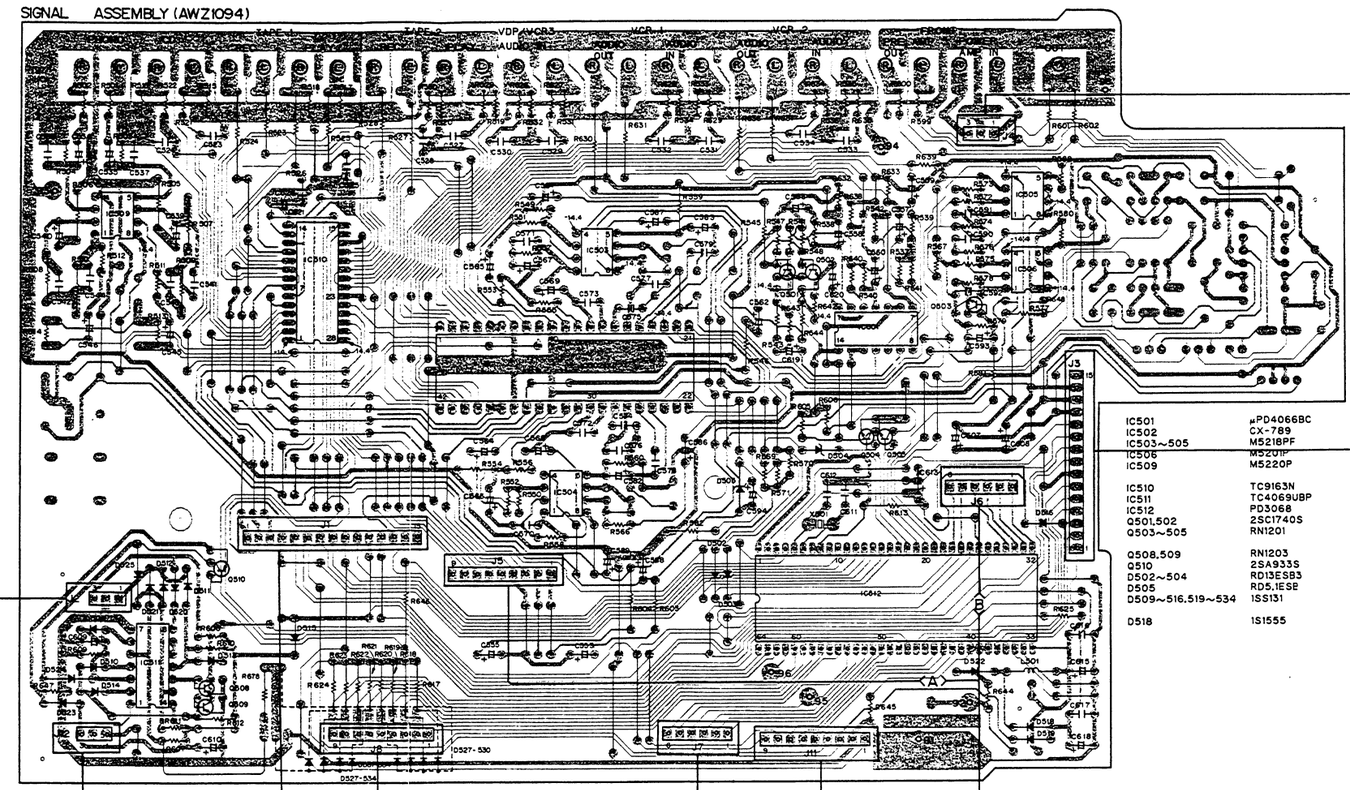




7 8 9 10 11 12

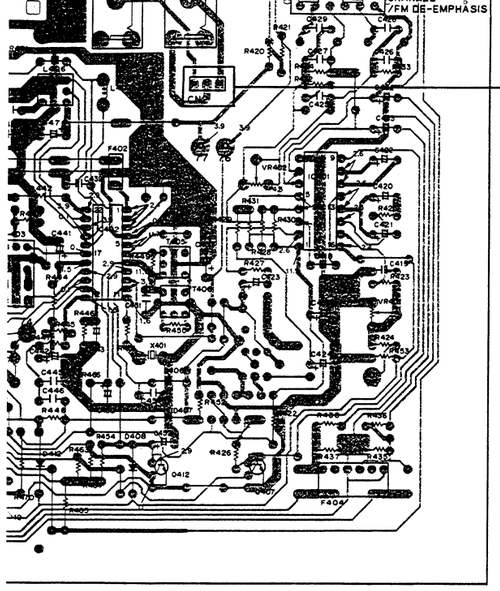
IC509 IC511 Q510 Q508 Q509 IC510 IC502 IC504 IC503 Q501 Q502 IC501 Q504 Q505 IC512 Q503 IC505 IC506

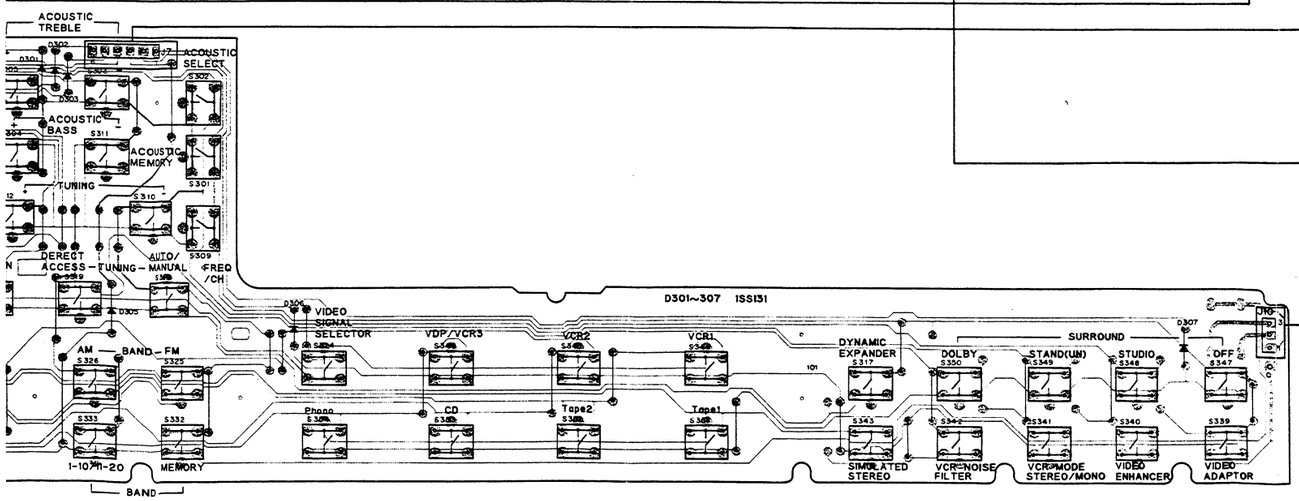
SIGNAL ASSEMBLY (AWZ1094)

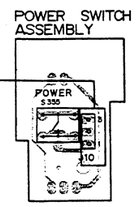


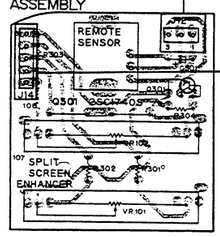
IC501	μPD4066BC
IC502	CX-789
IC503~505	M5218PF
IC506	M5201P
IC509	M5220P
IC510	TC9163N
IC511	TC4069UBP
IC512	PD3068
Q501,502	2SC1740S
Q503~505	RN1201
Q508,509	RN1203
Q510	2SA933S
D502~504	RD13ESB3
D505	RD5.1ESE
D509~516,519~534	1SS131
D518	1S1555

Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ





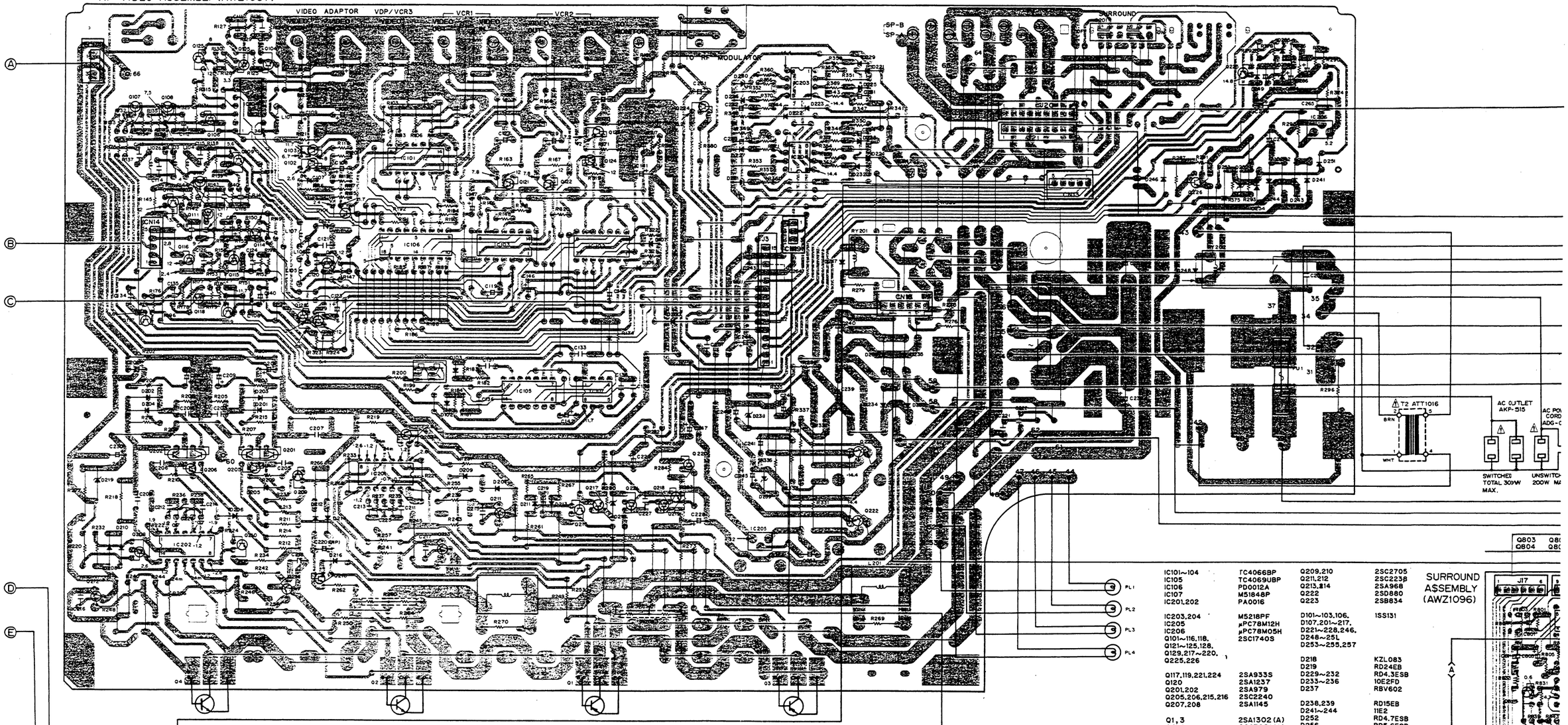


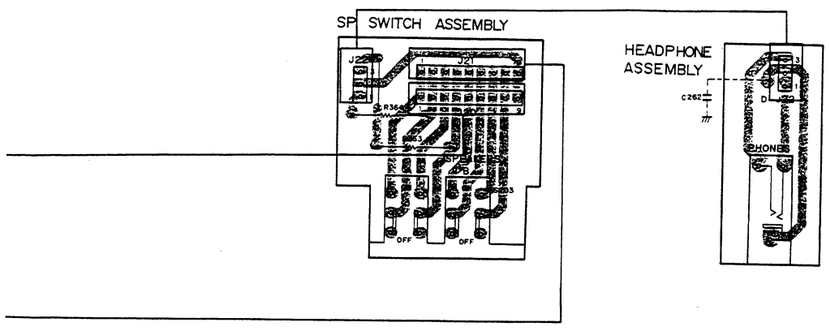


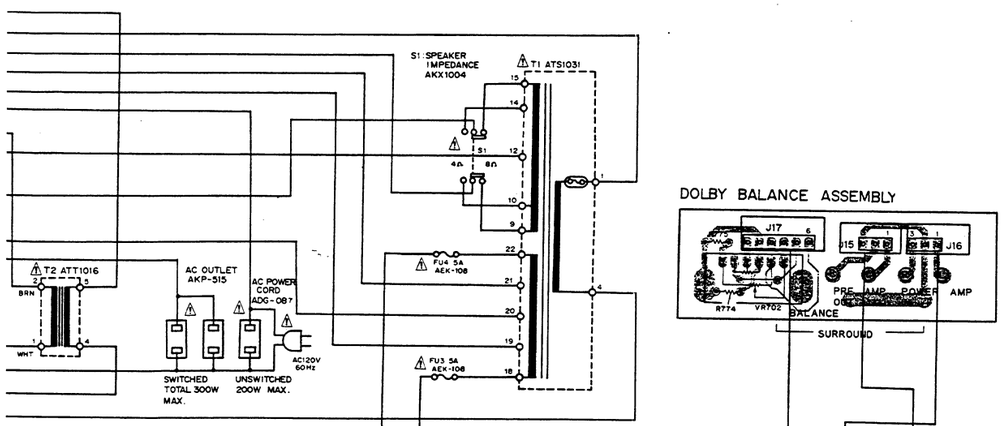
7 8 9 10 11 12

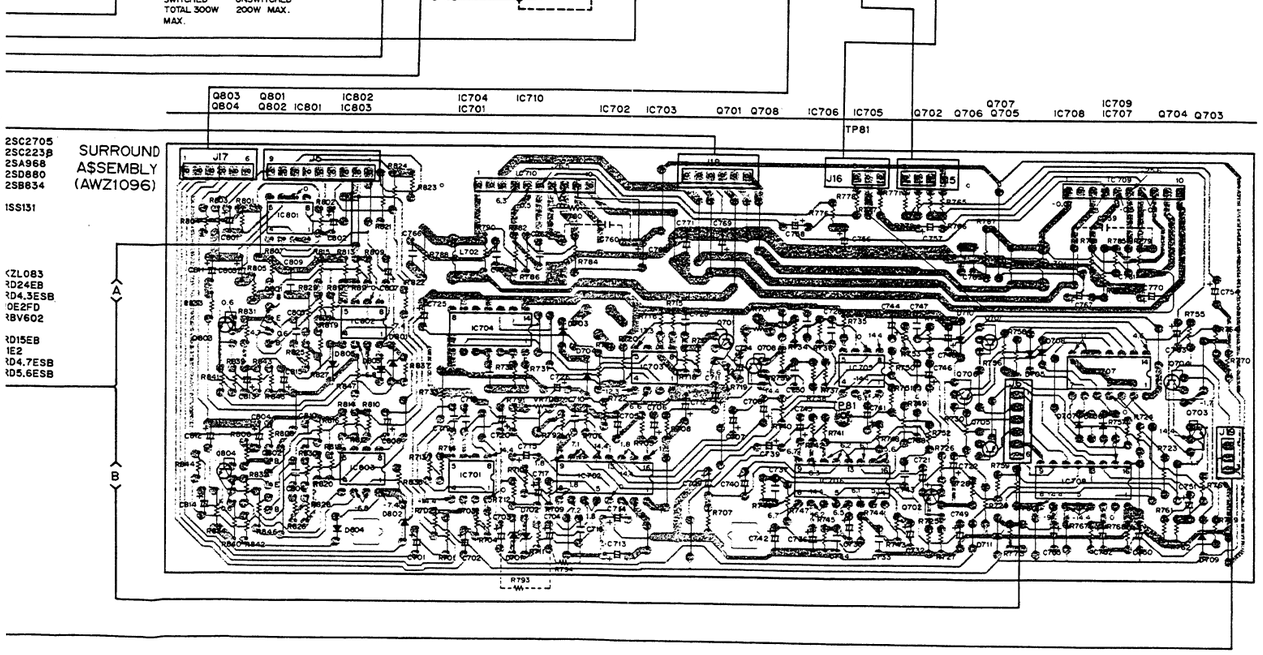
13 14 15 16 17 18

AF VIDEO ASSEMBLY (AWZ1097)



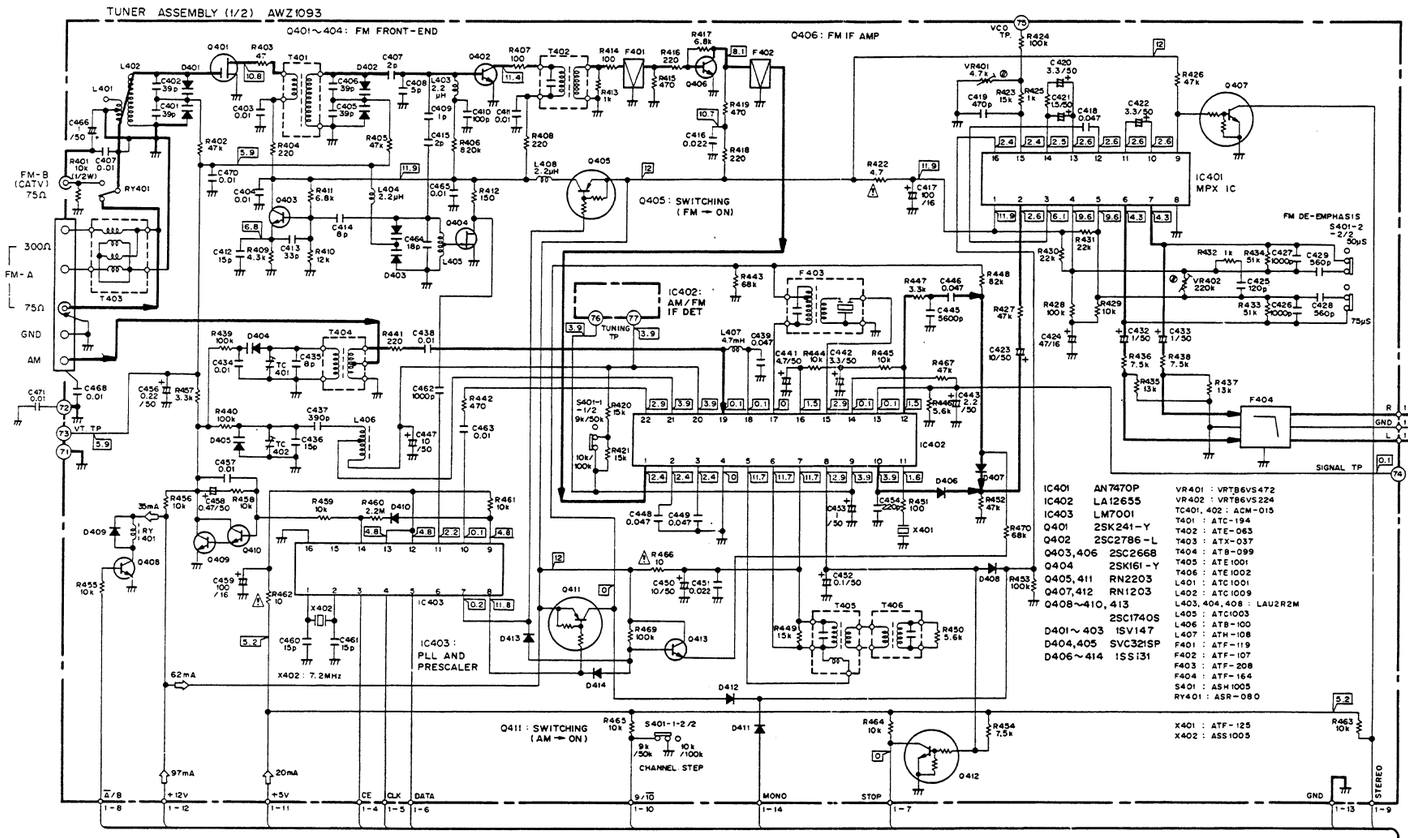


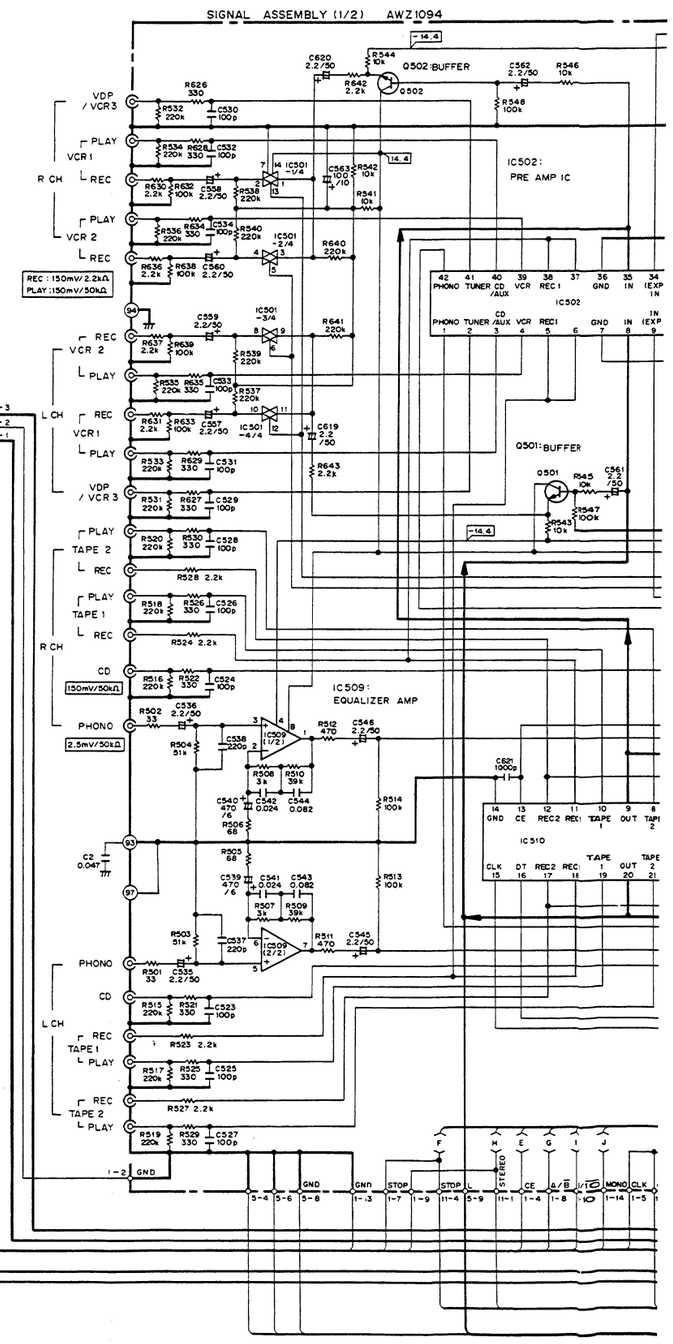


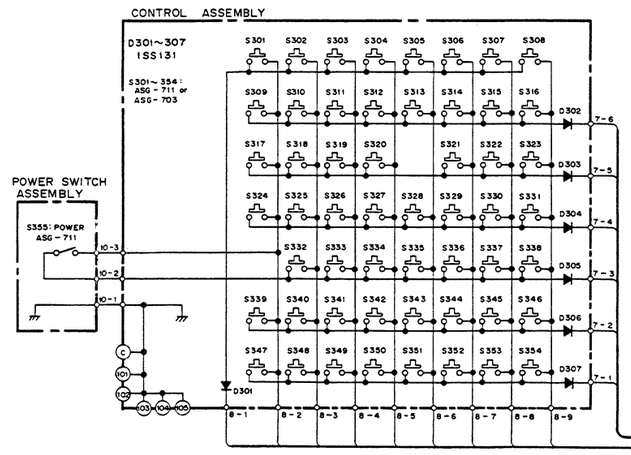


IC701,705,801~803	M5218PF
IC702	NE571
IC703	MN3007
IC704	TC4069UBP
IC706	LA2730
IC707	TC4066BP
IC708	CX7978
IC709,710	μPC1188H
Q701	2SA933S
Q702~704,708, Q803,804	2SC1740S
Q705~707	RN2203
Q801,802	2SC2259
D701,702	RD2.7ESB
D703~708,803,804	1SS131
D709,801,802	RD10ESB
D710,711	RD5.1ESB
D805	RD4.3ESB

10. SCHEMATIC DIAGRAM







1. RESISTORS.
Indicated in Ω, ¼W, ½ W.±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K), ±10%, (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT.
[V]; Signal voltage at (100 W+ 100 W, 8Ω)output (1kHz)
; DC voltage (V) at no input signal
Value in ( ) is DC voltage at rated power.
⇦mA ; DC current at no input signal
[mV]; Signal voltage at FM 1 kHz ± 75kHz DEV.

4. OTHERS:
➡ ; Signal route.
⊘ ; Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:

CONTROL ASSEMBLY
S301:ACOUSTIC A·B·C MEMORY
S302:ACOUSTIC SELECT (FLAT/LOUDNESS/A/B/C)
S303:ACOUSTIC TREBLE −
S304:ACOUSTIC BASS +
S305:ACOUSTIC TREBLE +
S306:MUTE
S307:MASTER VOLUME −
S308:MASTER VOLUME +
S309:FREQ/CH
S310:TUNING +
S311:ACOUSTIC BASS −
S312:TUNING +
S313:SURROUND VOLUME −
S314:SURROUND VOLUME +
S315:BALANCE LEFT
S316:BALANCE RIGHT
S317:DYNAMIC EXPANDER
S318:TUNING AUTO/MANUAL
S319:TUNING DIRECT ACCESS
S320:STATION FREQ/NAME
S321:FM MODE AUTO/MONO
S322:FM ANT A (NORM) /B (CATV)
S323:TV ANT VIDEO/TV
S324:VIDEO SIGNAL SELECTOR
S325:BAND FM
S326:BAND AM
S327:STATION CALL RANDOM 20CH 1/11
S328:STATION CALL RANDOM 20CH 2/12
S329:STATION CALL RANDOM 20CH 3/13
S330:STATION CALL RANDOM 20CH 4/14
S331:STATION CALL RANDOM 20CH 5/15
S332:BAND MEMORY
S333:BAND 1-10/11-20
S334:STATION CALL RANDOM 20CH 6/16
S335:STATION CALL RANDOM 20CH 7/17
S336:STATION CALL RANDOM 20CH 8/18
S337:STATION CALL RANDOM 20CH 9/19
S338:STATION CALL RANDOM 20CH 10/20
S339:VIDEO ADAPTOR
S340:VIDEO ENHANCER
S341:VCR MODE STEREO/MONO
S342:VCR NOISE FILTER
S343:SIMULATED STEREO
S344:VCR1
S345:VCR2
S346:VDP/VCR3
S347:SURROUND OFF
S348:SURROUND STUDIO
S349:SURROUND STADIUM
S350:SURROUND SURROUND (DOLBY)
S351:Tape1
S352:Tape2
S353:CD
S354:Phono

POWER SW ASSEMBLY
S355:POWER STAND-BY/ON

TUNER ASSEMBLY
S401 (−1) :CHANNEL STEP AM 9K − 10K
FM 50K − 100K
S401 (−2) :FM DE-EMPHASIS 50μs − 75μs

The underlined indicates the switch position.

2) AWZ1094

IC501 μPD4066BC
IC502 CX-789
IC503~505 M5218PF
IC506 M5201P
IC509 M5220P
IC510 TC9163N
IC511 TC4069UBP
IC512 PD3068
Q501,502 2SC1740S
Q503~505 RN1201
Q508,509 RN1203
Q510 2SA933S

D502~504 RD13ESB3
D505 RD5.1ESB
D509~516,519~ 1SS131
D518 1S1555

L501 : LAU101K
X501 : ASS-013

IC502: PRE AMP IC

IC504(1/2): TONE

IC504(2/2): BUFFER

IC505(1/2): 3/5

IC506: S/S SW

IC505(2/2): BUFFER

IC503(1/2): TONE

IC503(2/2): BUFFER

Q501: BUFFER

Q502: BUFFER

IC502 pin labels: 42 PHONO, 41 TUNER, 40 CD/AUX, 39 VCR, 38 REC1, 37 GND, 36 IN, 35 (EXP) IN, 34 GND, 33 OUT, 32 OUT, 31 IN, 30 BC, 29 TC, 28 HC, 27 LC, 26 OUT, 25 +15V, 24 -10V, 23 DATA, 22 CLOCK

IC510: FUNCTION SW

IC510 pin labels: 14 GND, 13 CE, 12 REC2, 11 REC1, 10 TAPE 1, 9 OUT, 8 TAPE 2 OUT, 7 REC2, 6 PHONO OUT, 5 CD, 4 TUNER, 3 PHONO, 2 PHONO, 1 -15V; 15 CLK, 16 DT, 17 REC2, 18 REC1, 19 TAPE 1 OUT, 20 TAPE 2 OUT, 21 REC2, 22 PHONO OUT, 23 CD, 24 TUNER, 25 PHONO, 26 PHONO, 27 +15V, 28

IC512 RECEIVER CONTROL

IC512 pin labels: 32 STROBE, 31 STUDIO, 30 DOLBY, 29 GND, 28 CLK, 27 CE, 26 DT, 25 CLK, 24 DT, 23 SW, 22 SW, 21 S.S, 20 STROBE, 19 CE, 18 CE, 17 AUTO STOP, 16 A/B, 15 STEREO, 14 9/10, 13 MONO, 12 GND, 11 GND, 10 EXTAL, 9 XTAL, 8 STBY, 7 INT, 6 RESET, 5 GND; 33 GND, 34 SUB, 35 A.C, 36 INH, 37 CE2, 38 CE1, 39 POWER RY, 40 RF CONV, 41 CLK, 42 DT, 43 DT, 44 CLK, 45 A, 46 B, 47 C, 48 D, 49 SUB, 50 GND, 51 INH, 52 CE2, 53 CE1, 54 PORY, 55 RF CONV, 56 +5V, 57 DT, 58 CLK, 59 DT, 60 R, 61 R, 62 L, 63 L, 64 DT

IC507, Q508-510: REMOTE CONTROL

IC511-4/6 IC511-5/6 IC511-3/6 IC511-2/6 IC511-6/6 IC511-1/6

X501 4MHz

BATTERY AEX-008

FRONT PRE AMP OUT 1V/470Ω

L + R OUT 1V/5kΩ

POWER OFF 26mA
POWER ON 32mA
4.5mA
52mA
43mA
FM: 61.5mA
AM: 47mA
CD: 46mA
20mA

SHORT: TEST MODE

TUNER ASSEMBLY (2/2) AWZ1093

IN CONTROL OUT

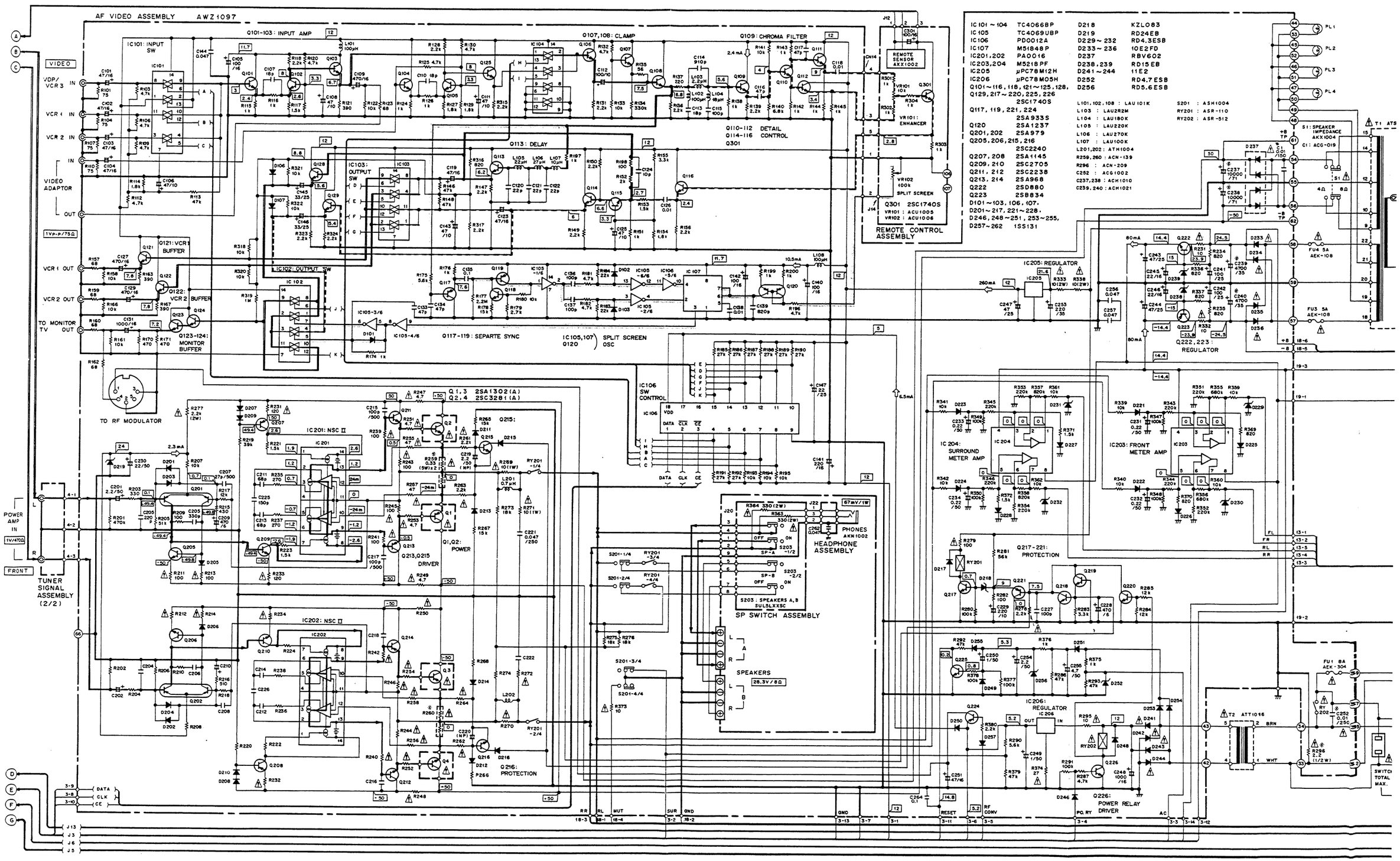
LCD ASSEMBLY

V301

IC301 IC301,302 LC7580 LCD DRIVER V301 AAV1010

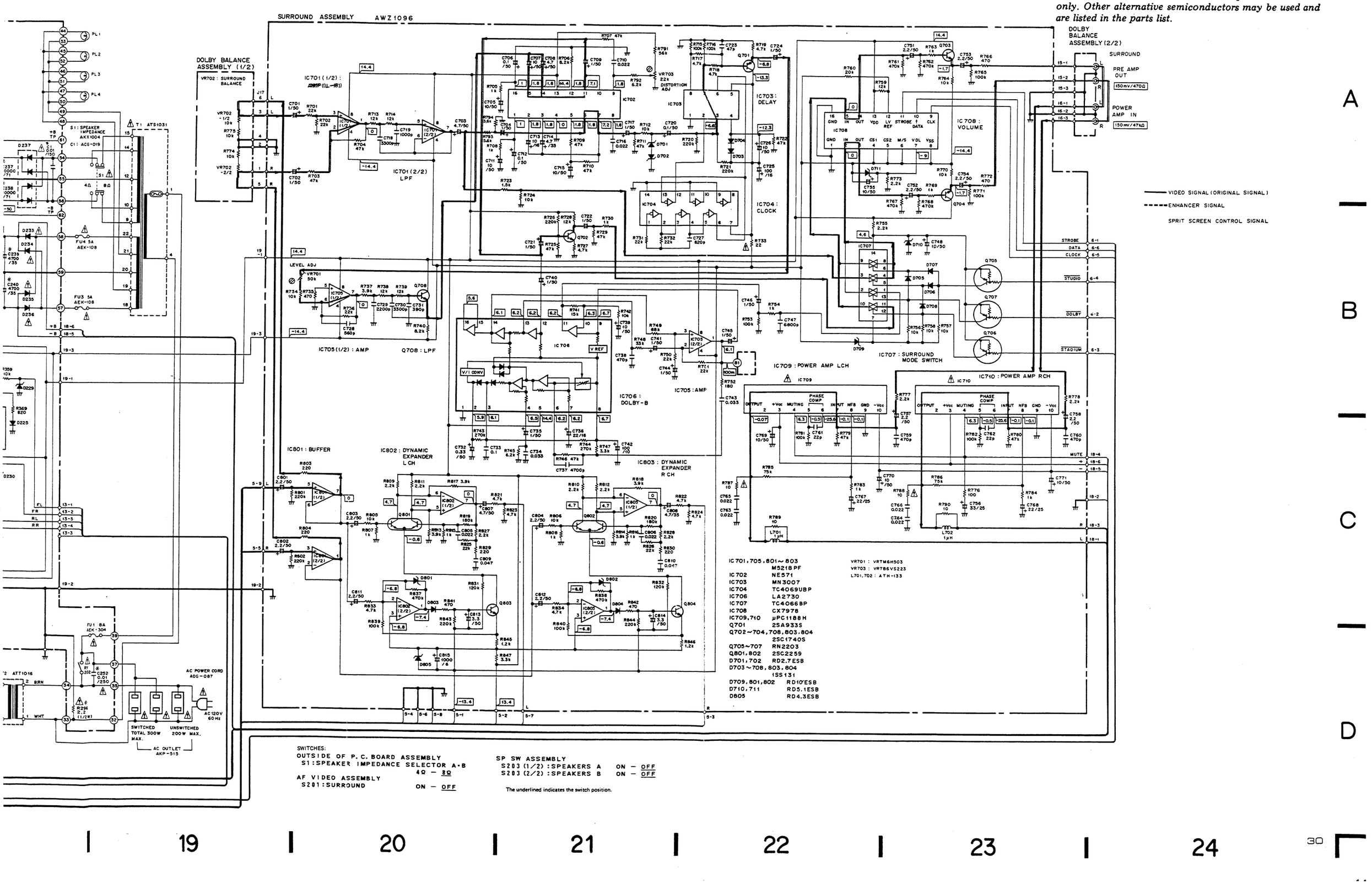
IC302

J12 J3 J6 J5



IC101 ~ 104	TC4066BP	D218	KZL083
IC105	TC4069UBP	D219	RD24EB
IC106	PD0012A	D229 ~ 232	RD4.3ESB
IC107	M51848P	D233 ~ 236	10E2F0
IC201,202	PA0016	D237	RBV602
IC203,204	M5218PF	D238,239	RD15EB
IC205	μPC78M12H	D241 ~ 244	11E2
IC206	μPC78M05H	D252	RD4.7ESB
Q101 ~ 116, 118, 121 ~ 125, 128, Q129, 217 ~ 220, 225, 226	2SC1740S	D256	RD5.6ESB
Q117, 119, 221, 224	2SA933S	L101, 102, 108 : LAU101K	
Q120	2SA1237	L103 : LAU2R2M	
Q201, 202	2SA979	L104 : LAU180K	
Q205, 206, 215, 216	2SC2240	L105 : LAU220K	
Q207, 208	2SA1145	L106 : LAU270K	
Q209, 210	2SC2705	L107 : LAU100K	
Q211, 212	2SC2238	L201, 202 : ATH1004	
Q213, 214	2SA968	R259, 260 : ACN-139	
Q222	2SD880	R296 : ACN-209	
Q223	2SB834	C252 : ACG1002	
D101 ~ 103, 106, 107, D201 ~ 217, 221 ~ 228, D246, 248 ~ 251, 253 ~ 255, D257 ~ 262	1SS131	C237, 238 : ACH1010	
		C239, 240 : ACH1021	
		S201 : ASH1004	
		RY201 : ASR-110	
		RY202 : ASR-512	

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



IC701,705,801~803 M5218PF
IC702 NE571
IC703 MN3007
IC704 TC4069UBP
IC706 LA2730
IC707 TC4066BP
IC708 CX7978
IC709,710 μPC1188H
Q701 2SA933S
Q702~704,708,803,804 2SC1740S
Q705~707 RN2203
Q801,802 2SC2259
D701,702 RD2.7ESB
D703~708,803,804 1SS131
D709,801,802 RD10ESB
D710,711 RD5.1ESB
D805 RD4.3ESB

VR701 : VRTM6H503
VR703 : VRT86VS223
L701,702 : ATH-133

SWITCHES:
OUTSIDE OF P.C. BOARD ASSEMBLY
S1 : SPEAKER IMPEDANCE SELECTOR A·B 4Ω — 8Ω
AF VIDEO ASSEMBLY
S201 : SURROUND ON — OFF

SP SW ASSEMBLY
S203 (1/2) : SPEAKERS A ON — OFF
S203 (2/2) : SPEAKERS B ON — OFF

The underlined indicates the switch position.

VSX-5000(BK)

11.ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	*56 × 10¹*	*561 .....*	*RD¼PS 5 6 1 J*
47kΩ	*47 × 10³*	*473 .....*	*RD¼PS 4 7 3 J*
0.5Ω	*0R5 .....*		*RN2H 0 R 5 K*
1Ω	*010 .....*		*RS1P 0 1 0 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621 ....*	*RN¼SR 5 6 2 1 F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Miscellaneous Parts

P.C.BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	Tuner assembly	AWZ1093
	Signal assembly	AWZ1094
	Surround assembly	AWZ1096
	AF Video assembly	AWZ1097
	Control assembly	Non supply
	LCD assembly	Non supply
	Remote control assembly	Non supply
	SP Switch assembly	Non supply
	Headphone assembly	Non supply
	Power Switch assembly	Non supply
	Dolby balance assembly	Non supply
	Remote control unit assembly	ADX1007

OTHERS

Mark	Symbol & Description	Part No.
⚠ ★★	Q2, Q4 Transistor	2SC3281(A)
⚠ ★★	Q1, Q3 Transistor	2SA1302(A)
⚠	C1 Ceramic capacitor (0.01 μF/AC150V)	ACG-019
	C2 Ceramic capacitor	CKDYF473Z50
⚠ ★	T1 Power transformer (AC120V)	ATS1031
⚠ ★	T2 Power transformer (AC120V)	ATT1016
⚠ ★★	S1 Speaker impedance selector	AKX1004
⚠ ★★	FU1 Fuse (AC125V, 8A)	AEK-304
⚠ ★★	FU3, FU4 Fuse (AC125V, 5A)	AEK-108
⚠	Battery	AEX-008
	Lamp with lead wire	AEL1020
⚠	AC power cord	ADG-087
⚠	AC Socket (AC OUTLET)	AKP-515 (AKP-504)

Tuner Assembly (AWZ1093)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC401 MAX IC	AN7470P
★★	IC402 AM/FM IC	LA1265S
★★	IC403 PLL IC	LM7001
★★	Q407, Q412	RN1203
★★	Q405, Q411	RN2203
★★	Q408—Q410, Q413	2SC1740S
★★	Q403, Q406	2SC2668
★★	Q402	2SC2786
★★	Q404	2SK161
★★	Q401	2SK241
★	D404, D405	SVC321SP
★	D406—D414	1SS131
★	D401—D403	1SV147

SWITCH AND RELAY

Mark	Symbol & Description	Part No.
★★	S401 Slide switch (SPLIT SCREEN, ENHNCER)	ASH1005
★★	RY401 Relay	ASR-080

COILES, TRANSFORMERS AND FILTERS

Mark	Symbol & Description	Part No.
	L406 AM OSC coil	ATB-100
	L401 FM coil	ATC1001
	L405 FM coil	ATC1003
	L402 FM coil	ATC1009
⚠ ★	T404 AM ANT transformer	ATB-099
⚠ ★	T401 FM RF transformer	ATC-194
⚠ ★	T402 FM Matching transformer	ATE-063
⚠ ★	T405 FM Detector transformer	ATE1001
⚠ ★	T406 FM Detector transformer	ATE1002
⚠ ★	T403 Balun	ATX-037

Mark	Symbol & Description	Part No.
	L407 Inductor	ATH-108
	L403, L404, L408 Inductor	LAU2R2M
	F402 FM Ceramic filter	ATF-107
	F401 FM Ceramic filter	ATF-119
	F404 Low—pass filter	ATF-164
	F403 AM Ceramic filter	ATF-208

CAPACITORS

Mark	Symbol & Description	Part No.
	TC401, TC402 Ceramic trimmer	ACM-015
	C409	CCDCH010C50
	C415	CCDCH020C50
	C414	CCDCH080D50
	C412, C460, C461	CCDCH150J50
	C413	CCDCH330J50
	C401, C402, C405, C406	CCDRH390J50
	C407	CCDSL020C50
	C408	CCDSL050C50
	C410	CCDSL101J50
	C454	CCDSL221J50
	C425	CCDSL680J50
	C435	CCDTH080D50
	C436	CCDTH150J50
	C464	CCDTH180J50
	C456	CEASR22M50
	C458	CEASR47M50
	C452	CEASOR1M50
	C432, C433, C453, C466	CEAS010M50
	C421	CEAS1R5M50
	C423, C447, C450	CEAS100M50
	C417, C459	CEAS101M16
	C443	CEAS2R2M50
	C420, C422, C442	CEAS3R3M50
	C441	CEAS4R7M50
	C424	CEAS470M16
	C462	CKCYB102K50
	C445	CKCYB562K50
	C416, C451	CKCYF223Z50
	C418, C439, C446, C448, C449	CKCYX473Z25
	C403, C404, C411, C432, C434, C438, C465, C465, C467, C468	CKDYF103Z50
	C470	CKDYF130Z50
	C426, C427	CQMA102J50
	C428, C429	CQMA471J50
	C437	CQSA391J50
	C419	CQSA471K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R401	RD1/2PM103J
⚠	R462, R466	RD1/4PMF100J
⚠	R422	RD1/4PMF4R7J
	R460	RD1/4PM225J
★	VR402 (229k)	VRTB6VS224
★	VR401 (4.7k)	VRTB6VS472
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Antenna terminal (4P)	AKA1003
	Jack (MINI)	AKN-207
★	X402 Crystal resonator	ASS1005
★	X401 Ceramic resonator	ATF-125

Signal Assembly (AWZ1094)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC502	CX-789
★★	IC506	M5201P
★★	IC503—IC505	M5218PF
★★	IC509	M5220P
★★	IC512 RECEIVER CONTROL IC	PD3068
★★	IC511	TC4069UBP
★★	IC510	TC9163N
★★	IC501	μPD4066BC
★★	Q503—Q505	RN1201
★★	Q508, Q509	RN1203
★★	Q510	2SA933S
★★	Q501, Q502	2SC1740S
★	D502—D504	RD13ESB3
★	D505	RD5.1ESB
★	D509—D516, D519—D525	1SS131
★	D518	1S1555

COIL

Mark	Symbol & Description	Part No.
	L501 Inductor	LAU101K

CAPACITORS

Mark	Symbol & Description	Part No.
	C523—C534	CCCSL101J50
	C570, C571, C611, C612	CCCSL220J50
	C537, C538	CCCSL221J50
	C535, C536	CEANL2R2M50
	C564, C565, C568, C569, C613	CEAS010M50
	C609	CEAS100M50
	C563	CEAS101M10
	C588, C589, C594, C610	CEAS101M16
	C566, C567, C615, C618	CEAS101M25
	C545, C546, C557—C562, C582, C583, C587, C586, C619, C620	CEAS2R2M50
	C607, C608	CEAS221M16
	C593	CEAS330M16
	C553, C555	CEAS471M16
	C539, C540	CEAS471M6
	C590	CKCYB331K50

Mark	Symbol & Description	Part No.
	C592	CKCYF222Z50
	C616, C617	CKCYF473Z50
	C574, C575	CQMA103J50
	C572, C573	CQMA184J50
	C541, C542	CQMA243J50
	C578, C579	CQMA273J50
	C576, C577, C591	CQMA332J50
	C543, C544	CQMA823J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
⚠	R603, R604	RD1/4PMF470J
	R582	RD1/4PM821J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
★	X501 Crystal resonator	ASS-013
	Terminal (4P)	AKB1007
	Terminal (6P)	AKB1008
	Terminal (1P)	AKB1011

Surround Assembly (AWZ1096)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC708	CX7978
★★	IC706	LA2730
★★	IC703	MN3007
★★	IC701, IC705, IC801—IC803	M5218PF
★★	IC702	NE571
★★	IC707	TC4066BP
★★	IC704	TC4069UBP
⚠ ★★	IC709, IC710	μPC1188H
★★	Q705—Q707	RN2203
★★	Q701	2SA933S
★★	Q702—Q704, Q708, Q803, Q804	2SC1740S
★★	Q801, Q802	2SC2259
★	D709, D801, D802	RD10ESB
★	D701, D702	RD2.7ESB
★	D805	RD4.3ESB
★	D710, D711	RD5.1ESB
★	D703—D708, D803, D804	1SS131

COILS

Mark	Symbol & Description	Part No.
	L701, L702 Choke coil	ATH-133

CAPACITORS

Mark	Symbol & Description	Part No.
	C761, C762	CCCSL220J50
	C723	CCCSL470J50
	C706, C712, C720	CEAS0R1M50
	C702, C704, C717, C724, C735, C740, C741, C744, C745, C746	CEAS010M50
	C705, C707, C711, C715, C726, C739, C748, C750, C755, C769—C771	CEAS100M50
	C742	CEAS101M10
	C725	CEAS101M16
	C815	CEAS102M6
	C751—C754, C757, C758, C801—C804, C811, C812	CEAS2R2M50
	C736	CEAS220M16
	C767, C768	CEAS220M25
	C813, C814	CEAS3R3M50
	C756	CEAS330M25
	C703, C708, C807	CEAS4R7M50
	C732	CEJAR33M50
	C701, C709, C721, C722	CEJA010M50
	C713, C749	CEJA100M16
	C714, C808	CEJA4R7M35
	C719	CKCYB102K50
	C729	CKCYB222K50
	C718, C730	CKCYB332K50
	C731	CKCYB391K50
	C738, C759, C760	CKCYB471K50
	C728	CKCYB561K50
	C747	CKCYB682K50
	C727	CKCYB821K50
	C733	CQMA104K50
	C710, C716, C763—C766, C805, C806	CQMA223K50
	C734, C743	CQMA333K50
	C737	CQMA472K50
	C809, C810	CQMA473K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
⚠	R733, R787, R788	RD1/4PMF□□□J
★	VR703 (22k)	VRTB6VS223
★	VR701 (50k)	VRTM6H503
	Other resistors	RD1/8PM□□□J

AF Video Assembly (AWZ1097)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC107	M51848P
★★	IC203, IC204	M5218PF
★★	IC201, IC202	PA0016
★★	IC106	PD0012A
★★	IC101—IC104	TC4066BP
★★	IC105	TC4069UBP
★★	IC206	μPC78M05H
★★	IC205	μPC78M12H
★★	Q207, Q208	2SA1145
★★	Q120	2SA1237

Mark		Symbol & Description	Part No.
	★★	Q117, Q119, Q221, Q224	2SA933S
	★★	Q213A, Q214A	2SA968
	★★	Q201, Q202	2SA979
	★★	Q223	2SB834
	★★	Q101—Q116, Q118, Q121—Q125, Q128, Q129, Q217—Q220, Q225, Q226	2SC1740S
	★★	Q211A, Q212A	2SC2238
	★★	Q205, Q206, Q215, Q216	2SC2240
	★★	Q209, Q210	2SC2705
	★★	Q222	2SD880
	★★	D218	KZL083
⚠	★	D237	RBV602
	★	D238, D239	RD15EB
	★	D219	RD24EB
	★	D229—D232	RD4.3ESB
	★	D252	RD4.7ESB
	★	D256	RD5.6ESB
	★	D101—D103, D106, D107, D201—D217, D221—D228, D246, D248—D251, D253—D255, D257	1SS131
⚠	★	D233—D236	10E2FD
⚠	★	D241—D244	11E2

SWITCHES AND RELAYS

Mark		Symbol & Description	Part No.
	★★	S201 (SURROUND SW)	ASH1004
	★	RY201	ASR-110
⚠	★	RY202	ASR-512

COILS

Mark	Symbol & Description	Part No.
	L201, L202 Choke coil (0.7mH)	ATH1004
	L107 Inductor (10uH)	LAU100K
	L101, L102, L108 Inductor (100uH)	LAU101K
	L104 Inductor (18uH)	LAU180K
	L103 Inductor (2.2uH)	LAU2R2M
	L105 Inductor (22uH)	LAU220K
	L106 Inductor (27uH)	LAU270K

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C252 (0.01 μF/AC120V)	ACG1002
	C237, C238 (1000/71V)	ACH1010
	C239, C240 (4700/35V)	ACH1021
	C124	CCCCH100D50
	C115	CCCCH101J50
	C113	CCCCH180J50
	C120—C122	CCCCH220J50
	C136, C137, C227	CCCSL101J50
	C215—C218	CCCSL101K500
	C225, C226	CCCSL151J50
	C107, C110	CCCSL180J50
	C203, C204	CCCSL221J50
	C207, C208	CCCSL270K500
	C116, C117, C133, C134	CCCSL470J50
	C211—C214	CCCSL680J50
	C219, C220	CEANP2R2M100
	C231—C234	CEASR22M50
	C249, C250	CEAS010M50
	C112	CEAS101M10
	C105, C140, C142	CEAS101M16
	C241, C242	CEAS101M25
	C248	CEAS102M16
	C201, C202, C254	CEAS2R2M50
	C245, C246	CEAS220M16
	C147	CEAS220M25
	C230	CEAS220M50
	C229	CEAS221M10
	C141	CEAS221M16
	C253	CEAS221M35
	C145, C146	CEAS330M25
	C255	CEAS4R7M50
	C106, C108, C111, C125, C143	CEAS470M10
	C101—C104, C119, C123, C251	CEAS470M16
	C243, C244, C247	CEAS470M25
	C109, C127, C129, C131	CEAS471M16
	C209, C210, C228	CEAS471M6
	C205, C206	CKCYB331K50
	C118, C126, C138	CKCYX103M25
	C144, C256, C257	CKDYF473Z50
	C135	CQMA104J50
	C221, C222	CQMA473K250
	C139	CQSA821J50
	C114	CQSA911J50

RESISDTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
⚠	R259, R260 (0.33Ω 5WX2)	ACN-139
⚠	R296 (2.2MΩ)	ACN-209
⚠	R279	RD1/4PMFL101J
⚠	R211—R214, R239—R246, R251—R258, R261—R264, R278, R295, R331, R332, R373, R374	RD1/4PMF□□□J
	R121, R163, R167, R170, R171, R177, R201—R204, R207—R210, R215—R224	RD1/4PM□□□J
⚠	R231—R234	RFA1/4PS121J
⚠	R247—R250	RFA1/4PS4R7J
⚠	R269—R272	RS1LMF100J
⚠	R333, R338	RS2LMF100J
⚠	R277	RS2LMF222J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Pin jack (1P)	AKB1010
	Terminal (SPEAKERS)(8P)	AKE-111
	DIN socket (5P)	AKP-081

Control Assembly
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★	D301—D307	1SS131

SWITCHES

Mark	Symbol & Description	Part No.
★★	S301—S354 (Tact switch) (ACOUSTIC MEMORY, ACOUSTIC, TREBLE−, BASS+, MUTE, VOLUME−, VOLUME+, FREQICH, TUNE−, BASS−, TUNE+, SURROUND•VOLUME, BLANCE LEFT, BLANCE RIGHT, EXPANDER, AUTO/MANU, DIRECT, STATION NAME, FM MONO, CATV, TV/VIDEO, V.SEL, FM, AM, 1, 2, 3, 4, 5, MEMORY, 1-10/11-20, 6, 7, 8, 9, 10, V.ADP, ENHANCER, VCR MODE, NOISE FILTER, SIMULATED STEREO, VCR1, VCR2, VDP, SURROUND OFF, STUDIO, STADIUM, DOLBY, TAPE1, TAPE2, CD, PHONO)	ASG-711 (ASG-703)

LCD Assembly
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC301, IC302	LC7580

CAPACITORS

Mark	Symbol & Description	Part No.
	C302, C303	CKPYB681K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
★	V301 Indicator	AAV1010

Remote Control Assembly
SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★★	Q301	2SC1740S

RESISTORS

Mark	Symbol & Description	Part No.
★	VR101 (100k)	ACU1005
★	VR102 (100k)	ACU1006
	R301—R304	D1/8PM102J

CAPACITORS

Mark	Symbol & Description	Part No.
	C301	CEAS101M16

OTHERS

Mark	Symbol & Description	Part No.
	Remote control sensor unit	AXX1002

SP switch Assembly
SWITCH

Mark	Symbol & Description	Part No.
★★	S203 Push switch (SPEAKER)	SUL5LXXSC

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R363, R364	RS2LMF331J

Headphone Assembly

Mark	Symbol & Description	Part No.
	Jack (PHONE)	AKN1002

Power switch Assembly

Mark	Symbol & Description	Part No.
★★	S355 Tact switch (POWER)	ASG-711 (ASG-703)

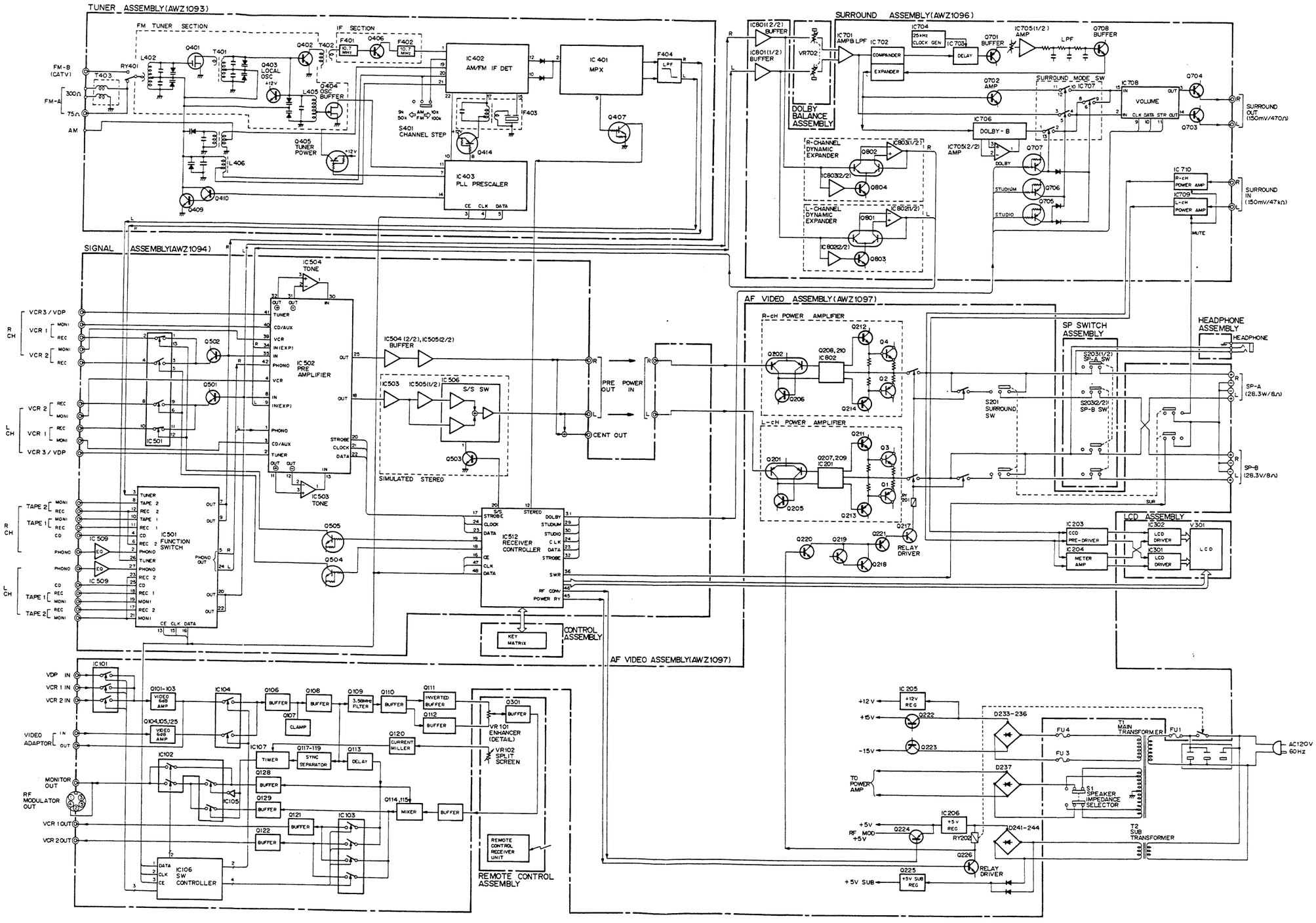
Dolby balance Assembly
RESISTORS

Mark	Symbol & Description	Part No.
★★	VR702 (10k)	ACT1006
	R774, R775	RD1/8PM103J

OTHERS

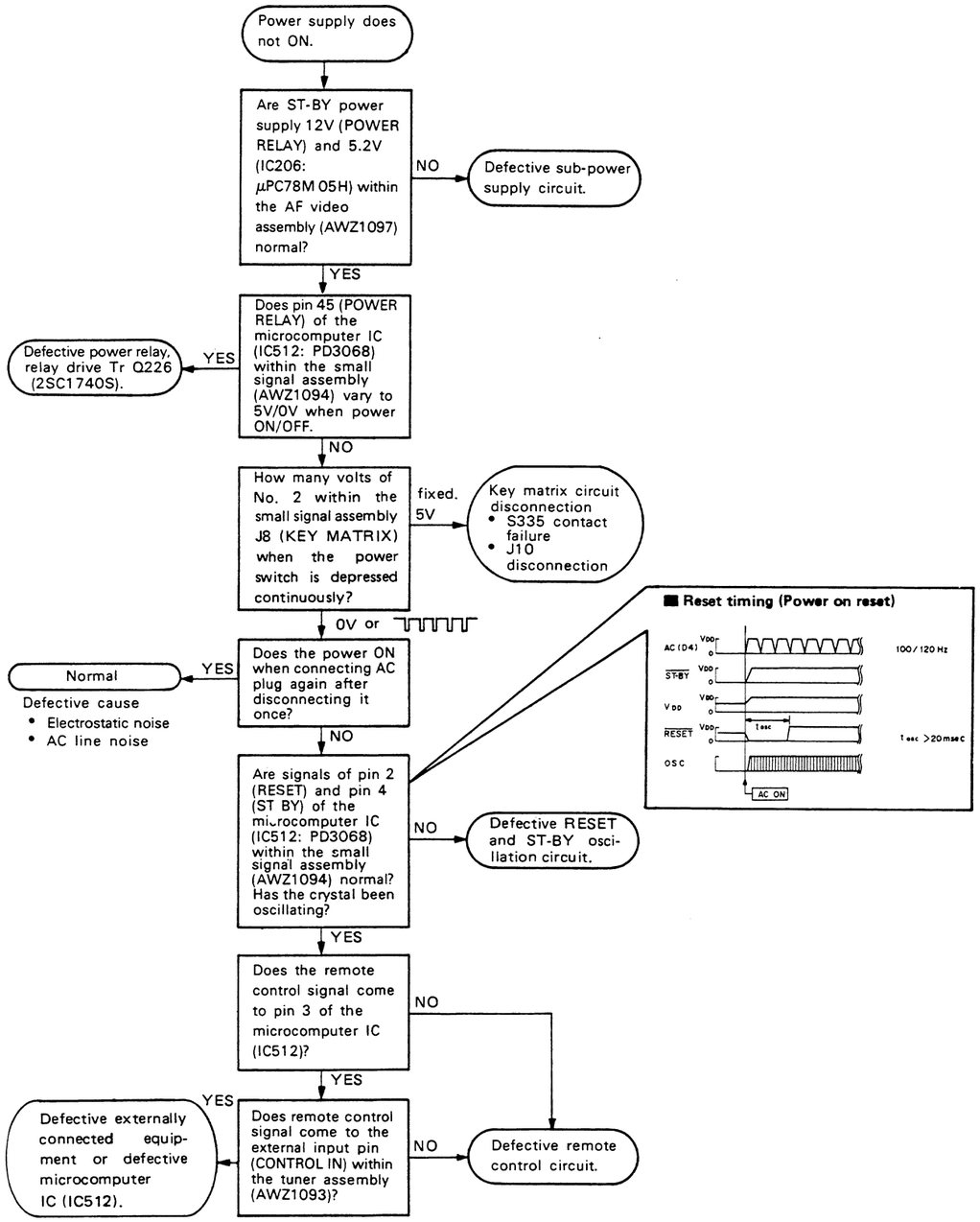
Mark	Symbol & Description	Part No.
	Pin jack (4P)	AKB1009

12. BLOCK DIAGRAM

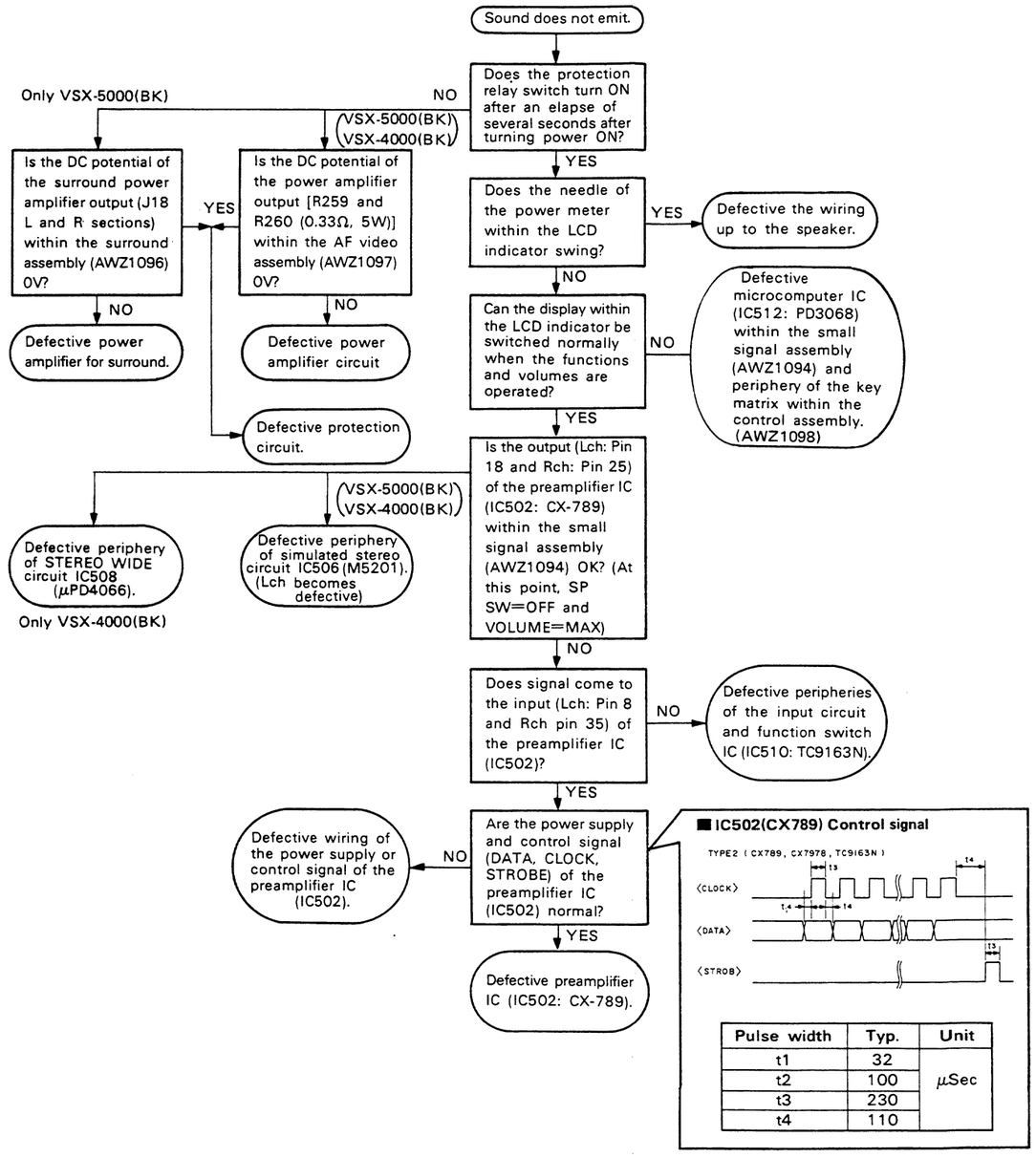


13. TROUBLESHOOTING

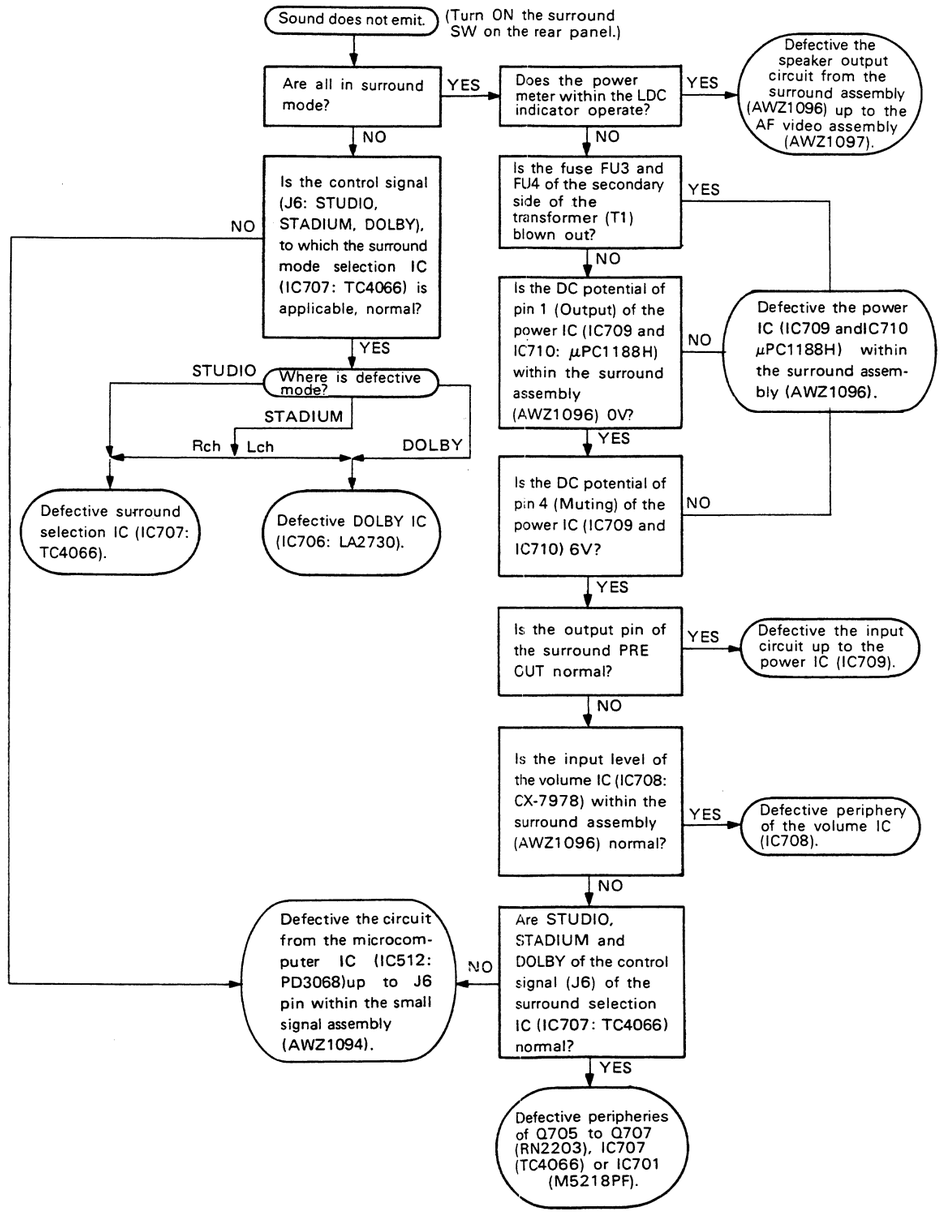
13.1 POWER SUPPLY DOES NOT ON.


Power supply does not ON.
Are ST-BY power supply 12V (POWER RELAY) and 5.2V (IC206: μPC78M05H) within the AF video assembly (AWZ1097) normal?
NO
Defective sub-power supply circuit.
YES
Does pin 45 (POWER RELAY) of the microcomputer IC (IC512: PD3068) within the small signal assembly (AWZ1094) vary to 5V/0V when power ON/OFF.
YES
Defective power relay, relay drive Tr Q226 (2SC1740S).
NO
How many volts of No. 2 within the small signal assembly J8 (KEY MATRIX) when the power switch is depressed continuously?
fixed. 5V
Key matrix circuit disconnection
• S335 contact failure
• J10 disconnection
0V or
Does the power ON when connecting AC plug again after disconnecting it once?
YES
Normal
Defective cause
• Electrostatic noise
• AC line noise
NO
Are signals of pin 2 (RESET) and pin 4 (ST BY) of the microcomputer IC (IC512: PD3068) within the small signal assembly (AWZ1094) normal? Has the crystal been oscillating?
NO
Defective RESET and ST-BY oscillation circuit.
YES
Does the remote control signal come to pin 3 of the microcomputer IC (IC512)?
NO
YES
Does remote control signal come to the external input pin (CONTROL IN) within the tuner assembly (AWZ1093)?
YES
Defective externally connected equipment or defective microcomputer IC (IC512).
NO
Defective remote control circuit.
■ Reset timing (Power on reset)
AC (D4)
ST-BY
VDD
RESET
OSC
100/120 Hz
1 sec
1 sec >20 msec
AC ON

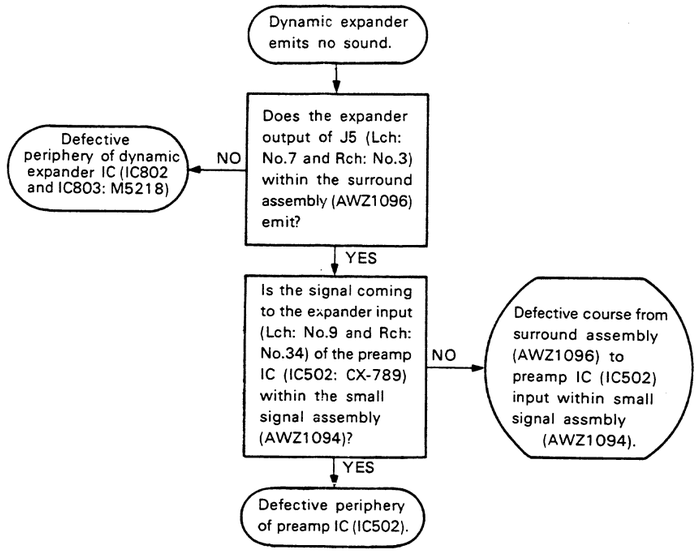
13.2 SOUND DOES NOT EMIT.


Sound does not emit.
Does the protection relay switch turn ON after an elapse of several seconds after turning power ON?
YES
Does the needle of the power meter within the LCD indicator swing?
YES
Defective the wiring up to the speaker.
NO
Can the display within the LCD indicator be switched normally when the functions and volumes are operated?
NO
Defective microcomputer IC (IC512: PD3068) within the small signal assembly (AWZ1094) and periphery of the key matrix within the control assembly. (AWZ1098)
YES
Is the output (Lch: Pin 18 and Rch: Pin 25) of the preamplifier IC (IC502: CX-789) within the small signal assembly (AWZ1094) OK? (At this point, SP SW=OFF and VOLUME=MAX)
NO
Does signal come to the input (Lch: Pin 8 and Rch pin 35) of the preamplifier IC (IC502)?
NO
Defective peripheries of the input circuit and function switch IC (IC510: TC9163N).
YES
Are the power supply and control signal (DATA, CLOCK, STROBE) of the preamplifier IC (IC502) normal?
NO
Defective wiring of the power supply or control signal of the preamplifier IC (IC502).
YES
Defective preamplifier IC (IC502: CX-789).
■ IC502(CX789) Control signal
TYPE2 (CX789, CX7978, TC9163N)
t3
t4
t4
t4
⟨CLOCK⟩
⟨DATA⟩
⟨STROB⟩
t3
Pulse width | Typ. | Unit
t1 | 32 | μSec
t2 | 100
t3 | 230
t4 | 110
Only VSX-5000(BK)
NO
(VSX-5000(BK) (VSX-4000(BK))
Is the DC potential of the surround power amplifier output (J18 L and R sections) within the surround assembly (AWZ1096) 0V?
YES
Is the DC potential of the power amplifier output [R259 and R260 (0.33Ω, 5W)] within the AF video assembly (AWZ1097) 0V?
NO
Defective power amplifier for surround.
NO
Defective power amplifier circuit
Defective protection circuit.
(VSX-5000(BK) (VSX-4000(BK))
Defective periphery of STEREO WIDE circuit IC508 (μPD4066).
Only VSX-4000(BK)
Defective periphery of simulated stereo circuit IC506 (M5201). (Lch becomes defective)

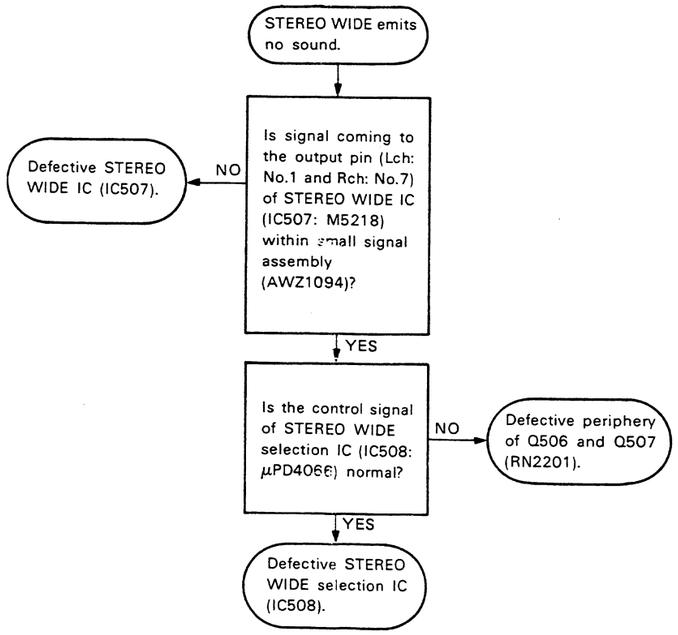
13.3 SURROUND DOES NOT EMIT. (ONLY VSX-5000(BK)).


Sound does not emit.
(Turn ON the surround SW on the rear panel.)
Are all in surround mode?
YES
Does the power meter within the LDC indicator operate?
YES
Defective the speaker output circuit from the surround assembly (AWZ1096) up to the AF video assembly (AWZ1097).
NO
Is the control signal (J6: STUDIO, STADIUM, DOLBY), to which the surround mode selection IC (IC707: TC4066) is applicable, normal?
NO
YES
STUDIO
Where is defective mode?
STADIUM
Rch
Lch
DOLBY
Defective surround selection IC (IC707: TC4066).
Defective DOLBY IC (IC706: LA2730).
NO
Is the fuse FU3 and FU4 of the secondary side of the transformer (T1) blown out?
YES
Defective the power IC (IC709 andIC710 μPC1188H) within the surround assembly (AWZ1096).
NO
Is the DC potential of pin 1 (Output) of the power IC (IC709 and IC710: μPC1188H) within the surround assembly (AWZ1096) 0V?
NO
YES
Is the DC potential of pin 4 (Muting) of the power IC (IC709 and IC710) 6V?
YES
Is the output pin of the surround PRE CUT normal?
YES
Defective the input circuit up to the power IC (IC709).
NO
Is the input level of the volume IC (IC708: CX-7978) within the surround assembly (AWZ1096) normal?
YES
Defective periphery of the volume IC (IC708).
NO
Are STUDIO, STADIUM and DOLBY of the control signal (J6) of the surround selection IC (IC707: TC4066) normal?
NO
Defective the circuit from the microcomputer IC (IC512: PD3068)up to J6 pin within the small signal assembly (AWZ1094).
YES
Defective peripheries of Q705 to Q707 (RN2203), IC707 (TC4066) or IC701 (M5218PF).

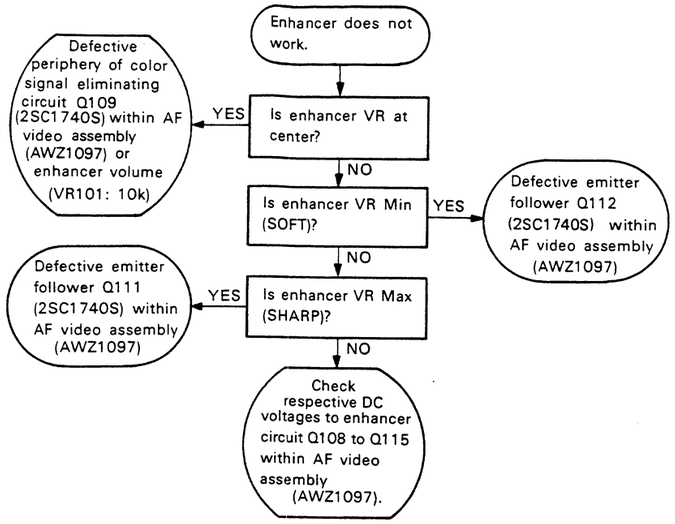
13.4.1 DYNAMIC EXPANDER EMITS NO SOUND. (ONLY VSX-5000(BK)).


Dynamic expander emits no sound.
Does the expander output of J5 (Lch: No.7 and Rch: No.3) within the surround assembly (AWZ1096) emit?
NO
Defective periphery of dynamic expander IC (IC802 and IC803: M5218)
YES
Is the signal coming to the expander input (Lch: No.9 and Rch: No.34) of the preamp IC (IC502: CX-789) within the small signal assembly (AWZ1094)?
NO
Defective course from surround assembly (AWZ1096) to preamp IC (IC502) input within small signal assmbly (AWZ1094).
YES
Defective periphery of preamp IC (IC502).

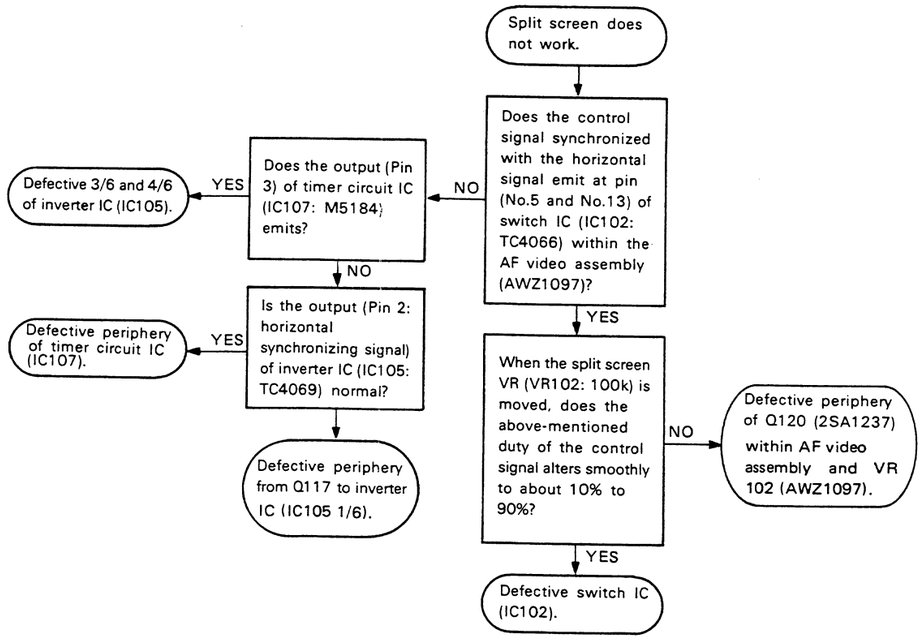
13.4.2 STEREO WIDE EMITS NO SOUND. (ONLY VSX-4000(BK)).


STEREO WIDE emits no sound.
Is signal coming to the output pin (Lch: No.1 and Rch: No.7) of STEREO WIDE IC (IC507: M5218) within small signal assembly (AWZ1094)?
NO
Defective STEREO WIDE IC (IC507).
YES
Is the control signal of STEREO WIDE selection IC (IC508: μPD4066) normal?
NO
Defective periphery of Q506 and Q507 (RN2201).
YES
Defective STEREO WIDE selection IC (IC508).

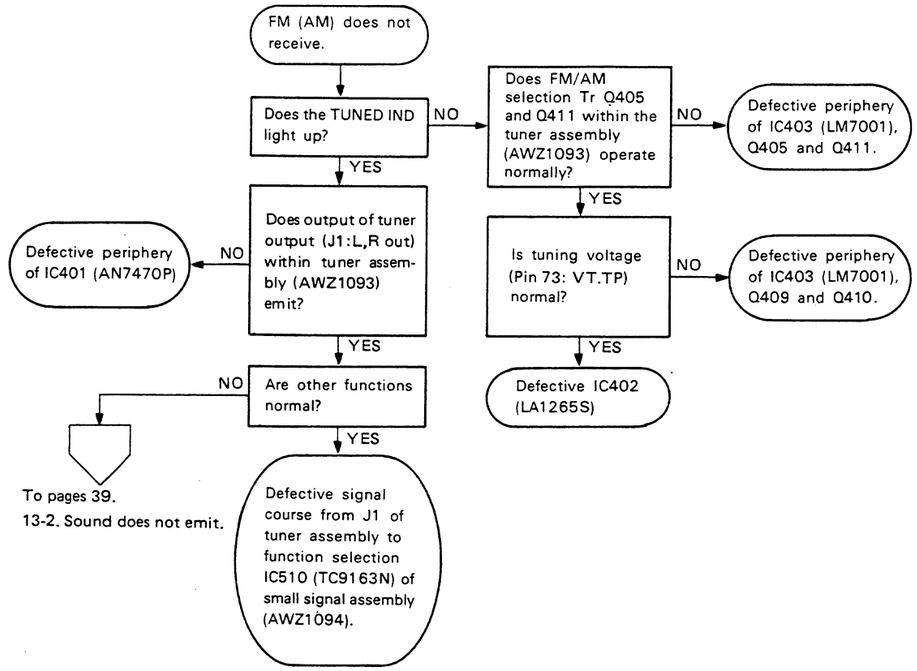
13.5 ENHANCER DOES NOT WORK.


Enhancer does not work.
Is enhancer VR at center?
YES
Defective periphery of color signal eliminating circuit Q109 (2SC1740S) within AF video assembly (AWZ1097) or enhancer volume (VR101: 10k)
NO
Is enhancer VR Min (SOFT)?
YES
Defective emitter follower Q112 (2SC1740S) within AF video assembly (AWZ1097)
NO
Is enhancer VR Max (SHARP)?
YES
Defective emitter follower Q111 (2SC1740S) within AF video assembly (AWZ1097)
NO
Check respective DC voltages to enhancer circuit Q108 to Q115 within AF video assembly (AWZ1097).

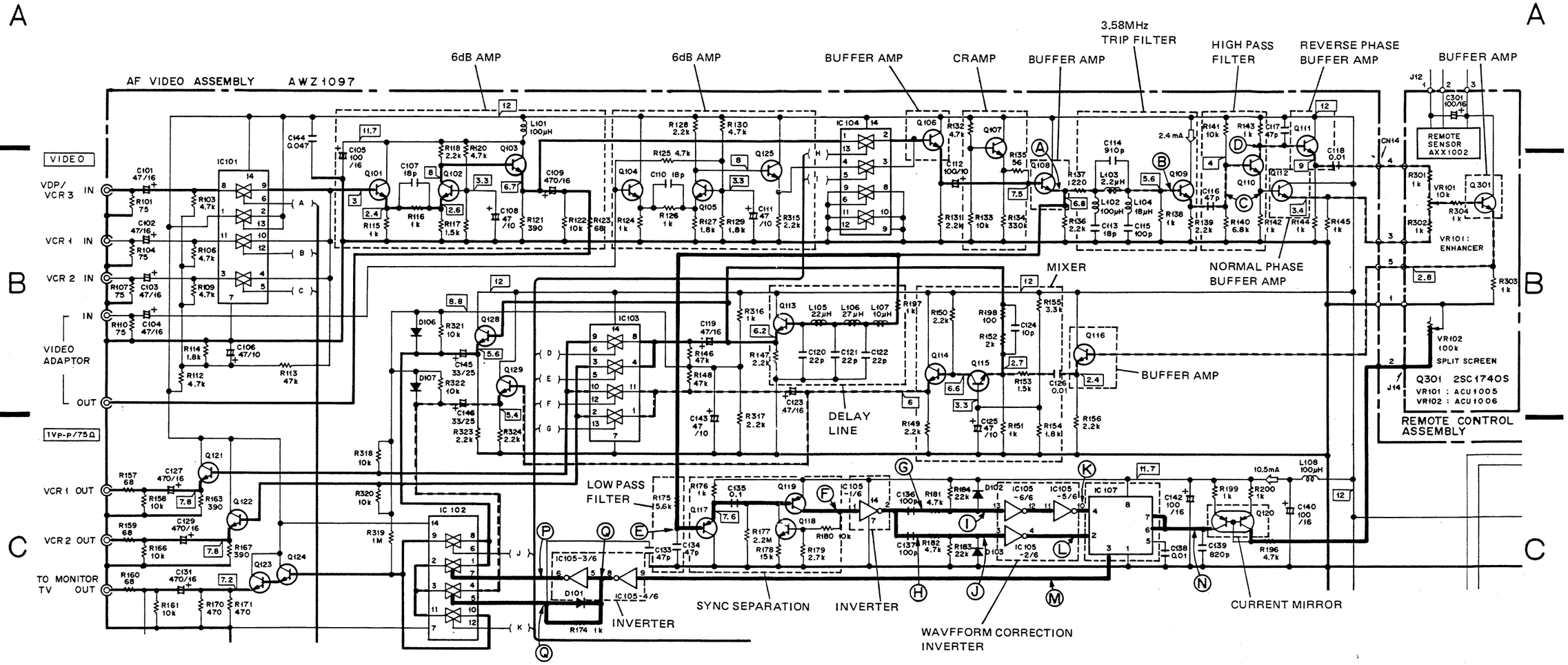
13.6 SPLIT SCREEN DOES NOT WORK.


Split screen does not work.
Does the control signal synchronized with the horizontal signal emit at pin (No.5 and No.13) of switch IC (IC102: TC4066) within the AF video assembly (AWZ1097)?
NO
Does the output (Pin 3) of timer circuit IC (IC107: M5184) emits?
YES
Defective 3/6 and 4/6 of inverter IC (IC105).
NO
Is the output (Pin 2: horizontal synchronizing signal) of inverter IC (IC105: TC4069) normal?
YES
Defective periphery of timer circuit IC (IC107).
NO
Defective periphery from Q117 to inverter IC (IC105 1/6).
YES
When the split screen VR (VR102: 100k) is moved, does the above-mentioned duty of the control signal alters smoothly to about 10% to 90%?
NO
Defective periphery of Q120 (2SA1237) within AF video assembly and VR 102 (AWZ1097).
YES
Defective switch IC (IC102).

13.7 FM(AM) DOES NOT RECEIVE.


FM (AM) does not receive.
Does the TUNED IND light up?
NO
Does FM/AM selection Tr Q405 and Q411 within the tuner assembly (AWZ1093) operate normally?
NO
Defective periphery of IC403 (LM7001), Q405 and Q411.
YES
Is tuning voltage (Pin 73: VT.TP) normal?
NO
Defective periphery of IC403 (LM7001), Q409 and Q410.
YES
Defective IC402 (LA1265S)
YES
Does output of tuner output (J1:L,R out) within tuner assembly (AWZ1093) emit?
NO
Defective periphery of IC401 (AN7470P)
YES
Are other functions normal?
NO
To pages 39.
13-2. Sound does not emit.
YES
Defective signal course from J1 of tuner assembly to function selection IC510 (TC9163N) of small signal assembly (AWZ1094).

14. SIGNAL RUTE



VIDEO SIGNAL (ORIGINAL SIGNAL)

ENHANCER SIGNAL

SPRIT SCREEN CONTROL SIGNAL

15. CIRCUIT DESCRIPTIONS

15.1 CIRCUIT DESCRIPTIONS

■ ENHANCER CIRCUIT

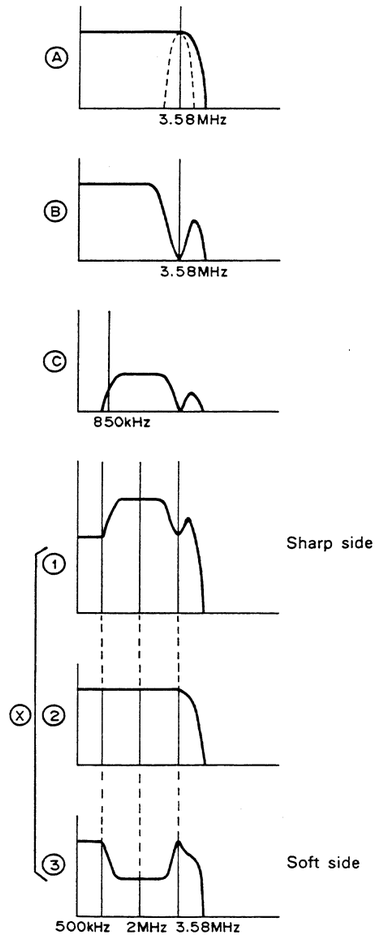
The video signal input from the respective video terminals is fed to the CLAMP circuit after being passed through 6dB amplifier and buffer amplifier. In the CLAMP circuit, it is operated so that emitter potential of Q107 is always same as the synchronizing level of the video signal (See Fig. Ⓐ). At this point, one signal is input to the switching IC (IC103) through the delay line and the other signal becomes black and white signal after eliminating the color signal component with a 3.58MHz trap filter (See Fig. Ⓑ). Furthermore, low frequency component is eliminated with the high-pass filter (fc=850kHz) (See Fig. Ⓒ).

The waveform of the signal input to the base of Q110 is taken out from the emitter side as it remains as the original form (See Fig. Ⓒ), and at the collector side, it is taken out as the inversed phase waveform (See Fig. Ⓓ). Then, the respective signals are mixed with the enhancer volume (VR101) after passing through the buffer amplifiers Q111 and Q112. At this point, depends on the difference position of the enhancer volume, they become respectively waveforms of Ⓡ-① to Ⓡ-③.

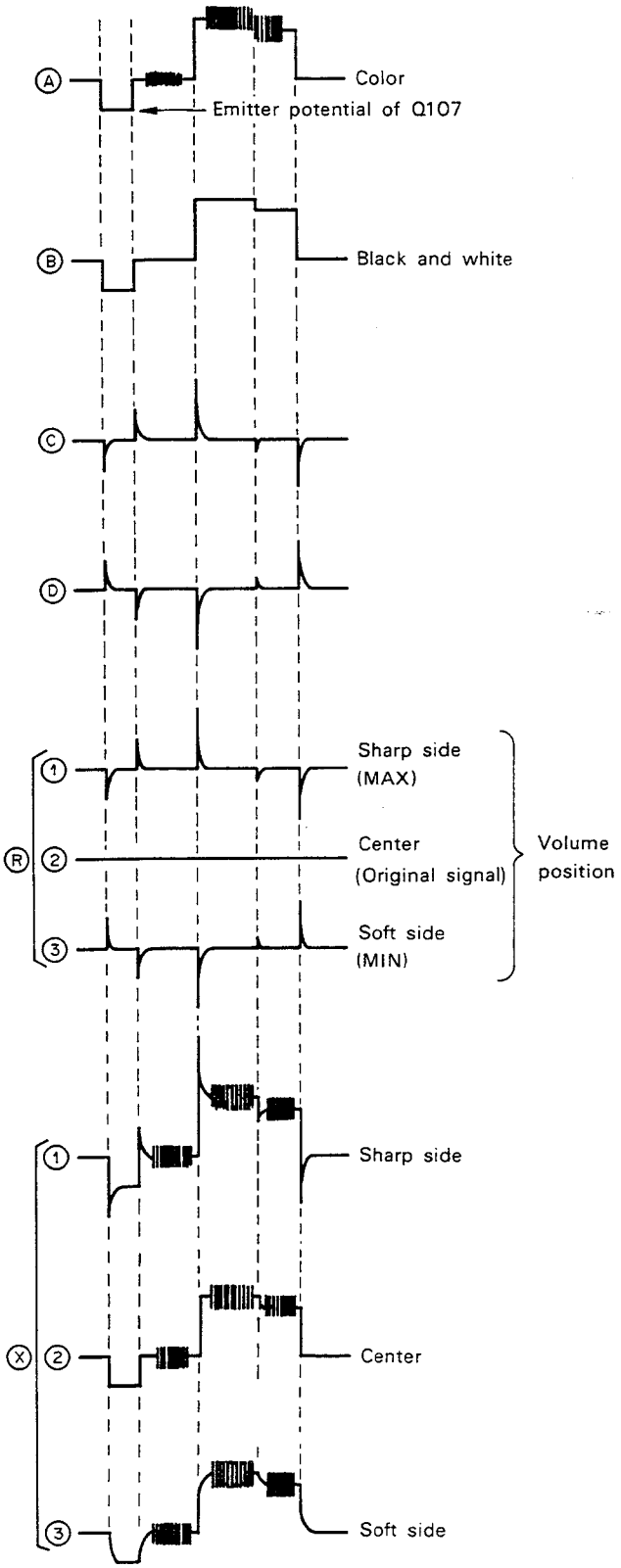
When the enhancer volume is set to the sharp position, the rising edge of the waveform becomes steep as shown in Fig. Ⓧ - ① and the contour of the TV screen picture becomes precise and sharp. When the enhancer volume is set to the soft position, the rising edge of the waveform becomes smooth as shown in Fig. Ⓧ-③ and the contour of the TV screen picture becomes soft.

The original signal passed through the buffer amplifier and the signal to which enhancer has been applied are mixed with each other in the MIXER circuit and output to the respective output terminals (See Fig. Ⓧ).

- **Frequency characteristics**



• **Signal waveform**



■ SPLIT SCREEN CIRCUIT

A partial of the video signal which has been passed through the CLAMP circuit (See Fig. Ⓐ) is input to the synchronizing separation circuit. In the synchronizing separation circuit, at first, color signal component is eliminated by passing through the low-pass filter (fc=600kHz) (See Fig. Ⓔ), and then, only the synchronizing pulse of the video signal is fetched with the synchronizing separation circuit (Q117 to Q119) (See Fig. Ⓕ).

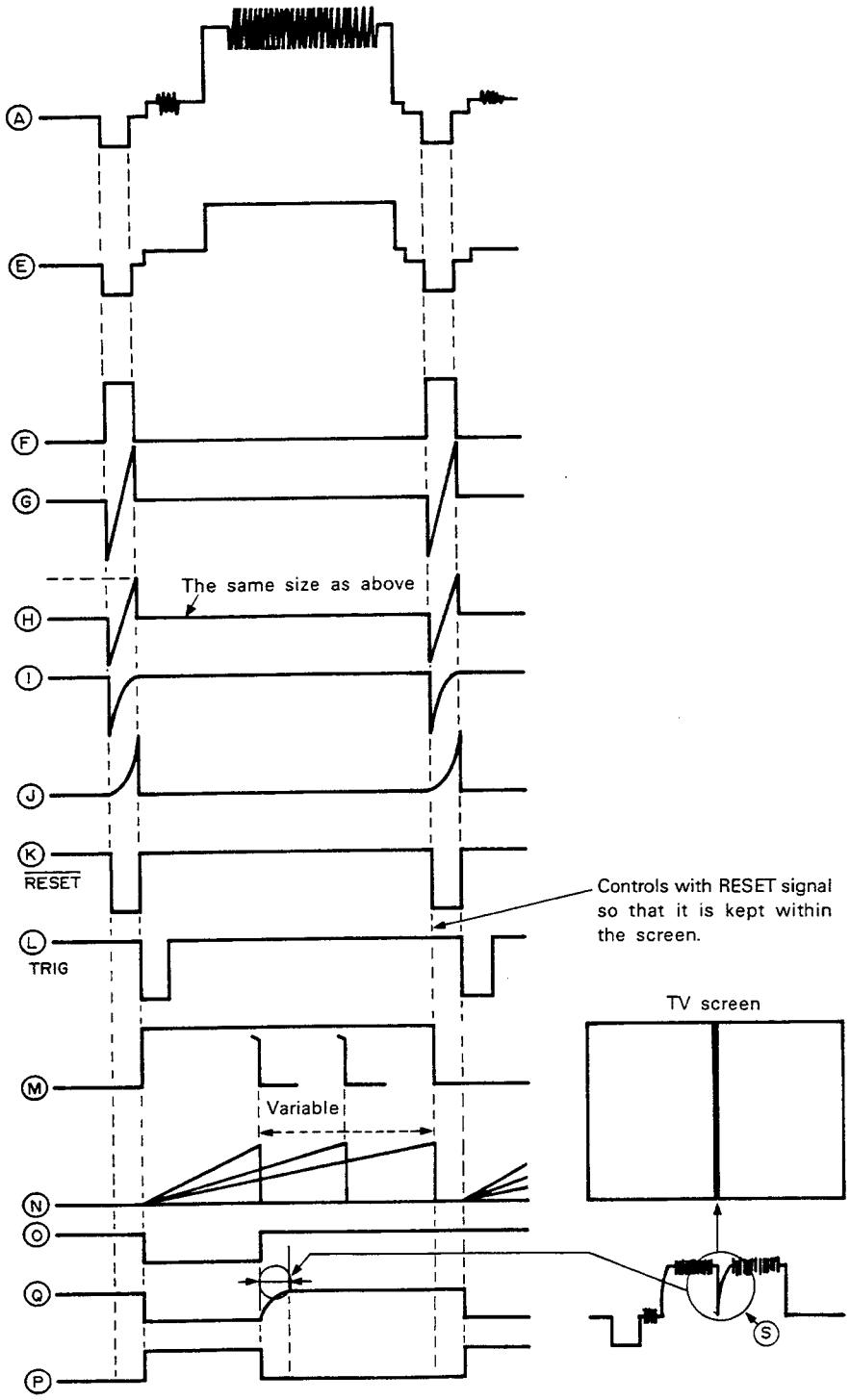
This pulse is input to the inverter (IC105-1/6) and its output is differentiated. The differentiated waveform becomes origin of the reset signal of IC107 and trigger signal (See Figs. Ⓖ and Ⓗ).

Moreover, from the waveforms shown in Figs. Ⓖ , Ⓗ and those of shown in Figs. Ⓘ , Ⓙ are generated by D102 and D103. After that, the signal of which waveform regulated by two inverters of IC105-5/6 and 6/6 is input to termnal 4 of IC107. This signal becomes the reset signal of IC107 (See Fig. Ⓚ). Furthermore, the signal of which waveform is regulated by one inverter of IC105-2/6 is input to terminal 2 of IC107 and it becomes the trigger signal(See Fig. Ⓛ) of IC107.

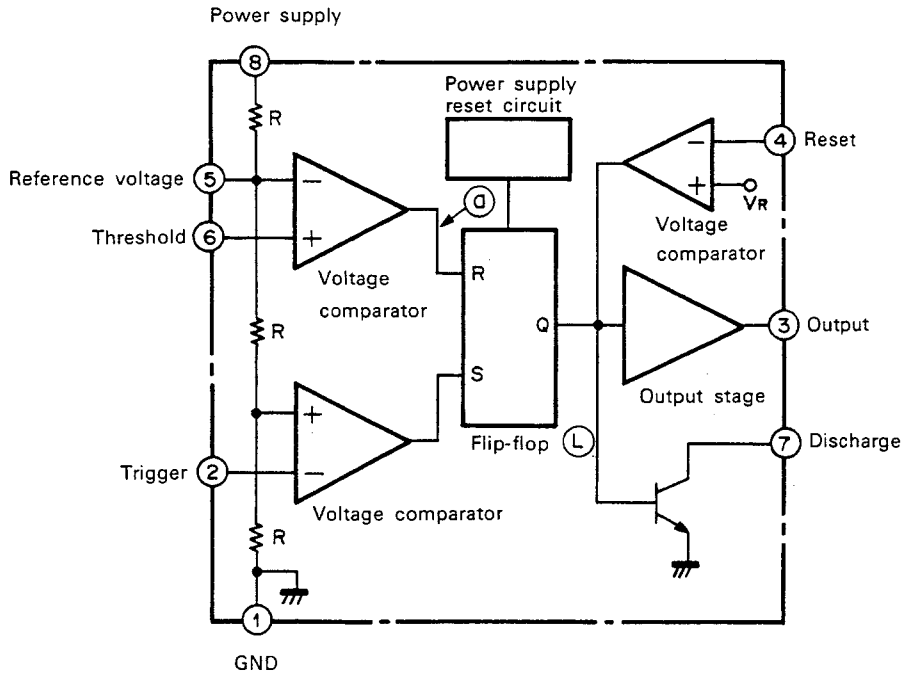
On terminals 6 and 7 of IC107, the waveform length (time length) is varied with the volume VR101 (split screen volume) and with the time constants of the current mirror transistor of Q101 and capacitor of C139 which is equivalent to Q101. By this waveform variation, the vertical line position of the split screen on the picture screen is shifted.

By the signal input to terminals 2, 4, 6, and 7, the waveform shown in Fig. Ⓜ is output from terminal 3 (See the Block Diagram of IC107). The waveform shown in Fig. Ⓜ which is output from terminal 3 of IC107 is inversed by the inverter of IC105-4/6 (See Fig. Ⓞ) and one is reinverted by the inverter of IC105-3/6 and then, input to terminal 7 of IC102 (See Fig. Ⓟ). The other is input to terminal 5 of IC102 after smoothening its waveform rising edge with D101, R174, and C133 (See Fig. Ⓠ). In order to make the rising edge of the waveform smooth as shown in Fig. Ⓠ , the operation time of terminal 5 of IC102 is delayed. Thus making time difference (the time when both waveforms of Ⓟ and Ⓠ become OFF) and generating the waveform of Fig. P , to appear the vertical line of split screen on the TV screen (See Fig. Ⓢ).

By switching this control signal, between one synchronizing signal and another, the picture to which enhancer is applied and that to which enhancer is not applied can simultaneously be seen apparently at the left and right sides of the vertical line of the split screen on the TV screen.

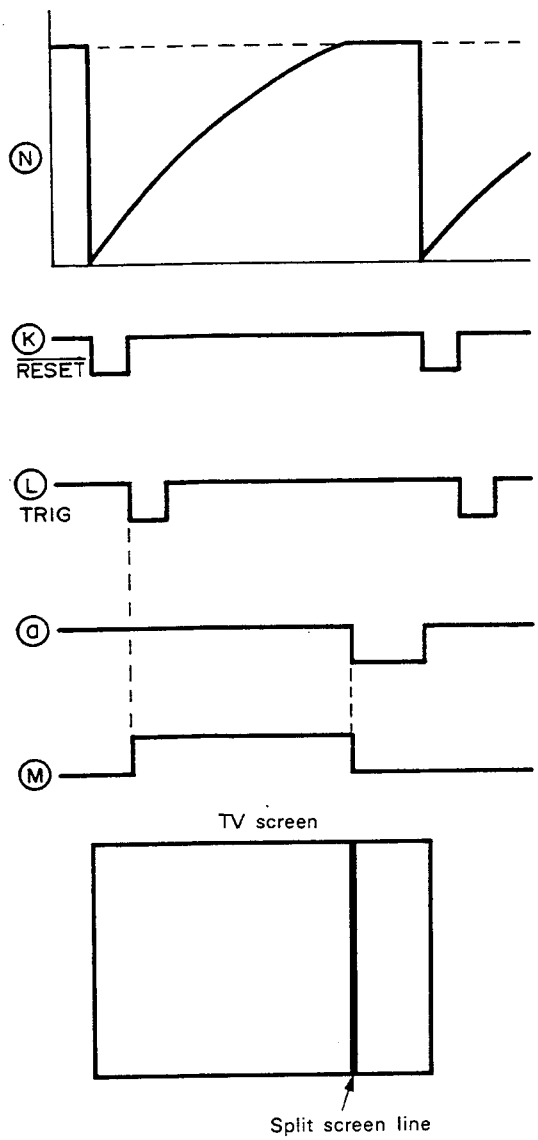

A
E
F
G
The same size as above
H
I
J
K
RESET
L
TRIG
Controls with RESET signal so that it is kept within the screen.
TV screen
M
Variable
N
O
Q
P
S

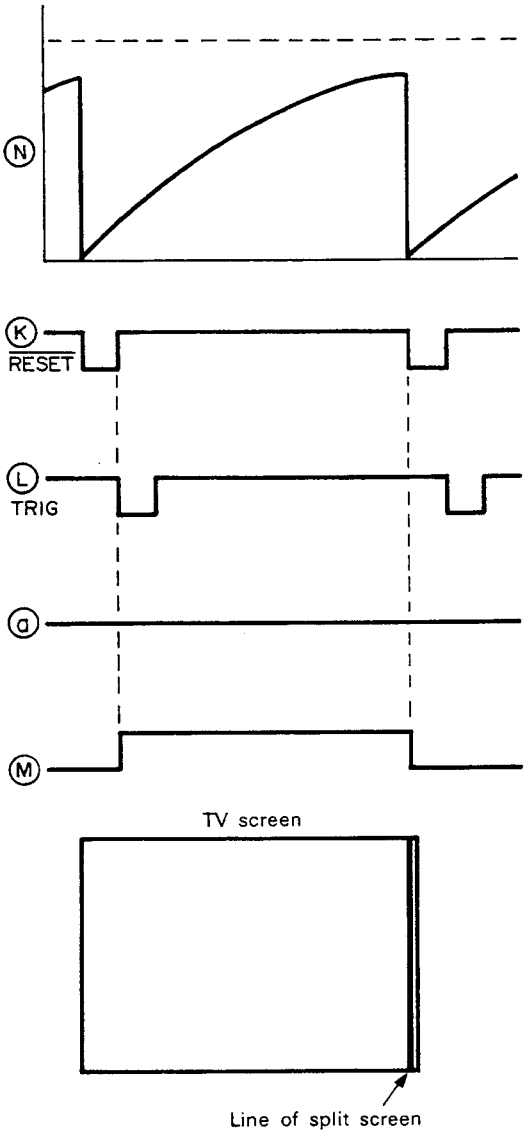
■ Block diagram and operation description of (M51848P)



Flip-flop logic table

S	R	Q
L	L	No variation
H	L	L
L	H	H
H	H	Inhibition

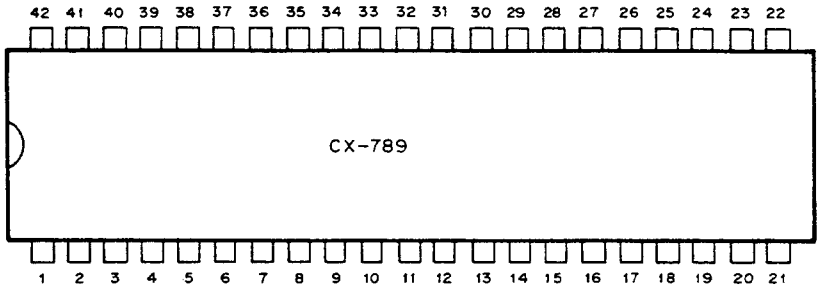

N
K
RESET
L
TRIG
a
M
TV screen
Split screen line


N
K
RESET
L
TRIG
a
M
TV screen
Line of split screen

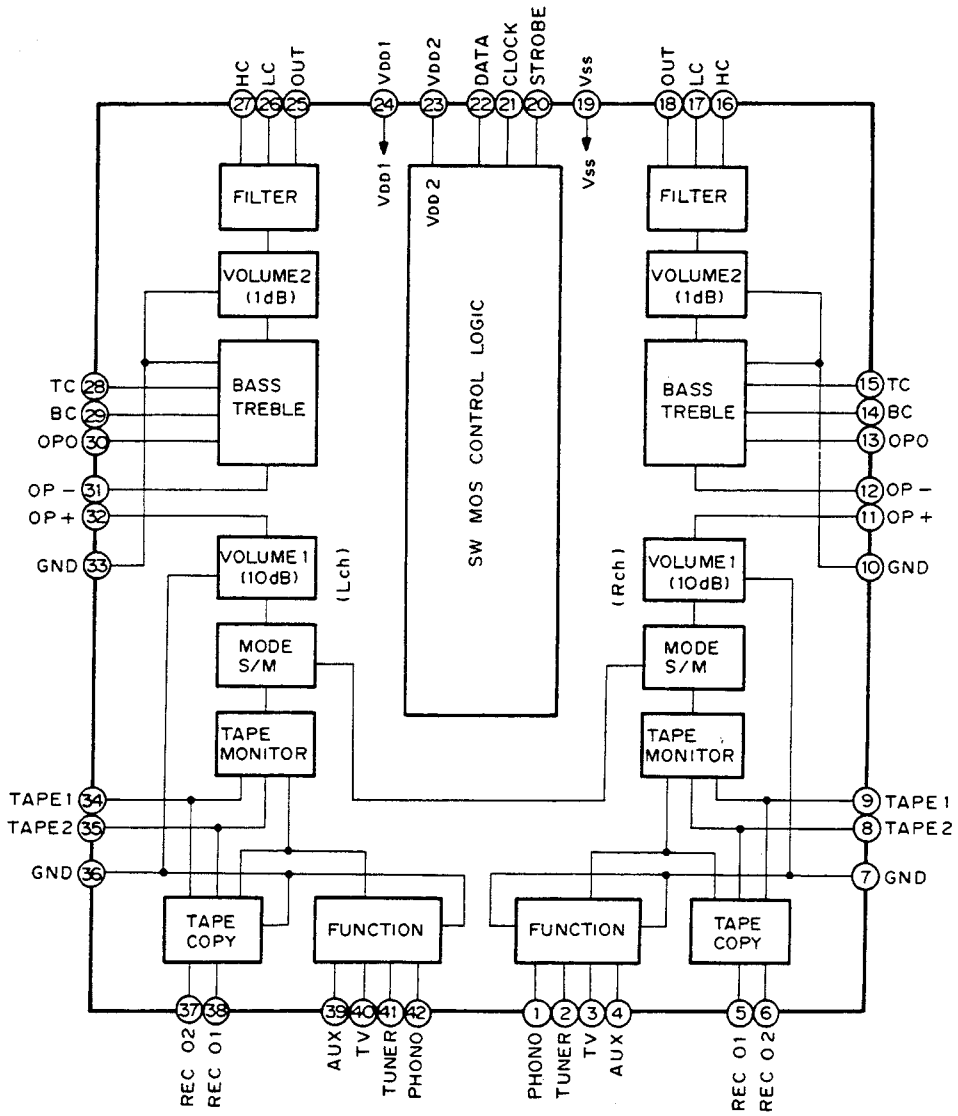
15.2 IC DATA

NOTE: In this IC data, there are different points from the actual ones. Refer to the circuit diagram and block diagram.

■ CX-789 TERMINAL DESCRIPTION



■Block diagram



Terminal No.	Symbol	Input/ Output	Terminal description
1	PHONO	I	PHONO INPUT TERMINAL (From EQ Amp.)
2	TUNER	I	TUNER input terminal
3	TV	I	TV input terminal
4	AUX	I	AUX input terminal
5	REC 01	O	REC output terminal 1
6	REC 02	O	REC output terminal 2
7	GND	–	Ground terminal
8	TAPE 2	I	TAPE 2 input terminal
9	TAPE 1	I	TAPE 1 input terminal
10	GND	–	Ground terminal
11	OP+	O	Output terminal to OP Amp. (+)
12	OP–	O	Output terminal to OP
13	OPO	I	Output terminal from OP Amp. out
14	BC	I	Input terminal from the capacitor for BASS
15	TC	O	Output terminal to the capacitor for TREBLE
16	HC	O	Output terminal to the capacitor for HIGH FILTER
17	LC	O	Output terminal to the capacitor for LOW FILTER
18	OUT	O	Output terminal
19	VSS	–	Power supply terminal
20	STROBE	I	Logic section strobe
21	CLOCK	I	Logic section CLOCK input terminal
22	DATA	I	Logic section DATA input terminal
23	VDD 2	–	Power supply terminal
24	VDD 1	–	Power supply terminal
25	OUT	O	Output terminal
26	LC	O	Output terminal to the capacitor for LOW FILTER
27	HC	O	Output terminal to the capacitor for HIGH FILTER
28	TC	O	Output terminal to the capacitor for TREBLE
29	BC	I	Input terminal from the capacitor for BASS
30	OPO	I	Input terminal from OP Amp. out
31	Op–	O	Output terminal to Op Amp. (–)
32	OP+	O	Output terminal to Op Amp. (+)
33	GND	–	Ground terminal
34	TAPE 1	I	TAPE 1 input terminal
35	TAPE 2	I	TAPE 2 input terminal
36	GND	–	Ground terminal
37	REC 02	O	REC output terminal 2
38	REC 01	O	REC output terminal 1
39	AUX	I	AUX input terminal
40	TV	I	TV input terminal
41	TUNER	I	TUNER input terminal
42	PHONO	I	PHONO input terminal (from EQ Amp.)

■ Serial Data Input Format

bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

LSB MSB

Lch VOLUME 2 (1dB)	Lch VOLUME 1 (10dB)	LOW FIL-TER	Rch VOLUME 2 (1dB)	Rch VOLUME 1 (10dB)	0

TREBLE	BASS	TAPE MONITOR	TAPE COPY	FUNCTION	HIGH FIL-TER	1

MODE	0 0 0	BASS	TAPE MONITOR	TAPE COPY	FUNCTION	HIGH FIL-TER	1

*1 DATA is input from MSB.
*2 bit 15
0 VOLUME DATA
1 Other DATA
*3 bit 1 2 3
0 0 0 MODE DATA
□□□ TREBLE DATA

■ Control Data

	Function	Tape monitor	Tape copy
DATA	POSITION	POSITION	POSITION
0	PHONO	SOURCE	SOURCE
1	TUNER	TAPE1	TAPE1-2
2	TV	TAPE2	TAPE2-1
3	AUX	all OFF	all OFF

	HIGH FILTER LOW FILTER	MODE
DATA	POSITION	POSITION
0	OFF	STEREO
1	ON	MONAURAL

	TREBLE BASS
DATA	POSITION
3	+10dB
4	+ 8
5	+ 6
6	+ 4
7	+ 2
8	0
9	− 2
A	− 4
B	− 6
C	− 8
D	−10

	VOLUME 1 (10dB)	VOLUME 2 (1dB)
DATA	POSITION	POSITION
0	0	0
1	10	1
2	20	2
3	30	3
4	40	4
5	50	5
6	60	6
7	70	7
8		8
9		9
A		A(∞)

*1 VOLUME attenuation is the sum of VOLUME 1 and VOLUME 2.
ex. 56 dB = 50 dB + 6 dB
↑ 10 dB posi, ↑ 1 dB posi
data 5 6

*2 By controlling the VOLUMEs Lch and Rch independently, it becomes BALANCE CONTROL.

■ IC Internal SW State

(1) Tape monitor

	data		SW No.		
	9	10	105	106	107
SOURCE	0	0	1	0	0
Tape 1	1	0	0	1	0
Tape 2	0	1	0	0	1

(2) Tape copy

	data		SW No.		
	11	12	109	110	108
SOURCE	0	0	1	0	0
T1→T2	1	0	0	1	0
T2→T1	0	1	0	0	1

(3) Function

	data		SW No.			
	13	14	101	102	103	104
Phono	0	0	1	0	0	0
Tuner	1	0	0	1	0	0
TV	0	1	0	0	1	0
AUX	1	1	0	0	0	1

(4) Mode

	data	SW No.	
	1	112	113
Stereo	0	1	0
Mono	1	0	1

(5) Volume 1 dB step (Lch)

Step (1dB)	data				SW No.									
	1	2	3	4	509	510	511	512	513	514	515	516	517	518	519
0	0	0	0	0	1										
1	1	0	0	0		1									
2	0	1	0	0			1								
3	1	1	0	0				1							
4	0	0	1	0					1						
5	1	0	1	0						1					
6	0	1	1	0							1				
7	1	1	1	0								1			
8	0	0	0	1									1		
9	1	0	0	1										1	
10	0	1	0	1											1

(6) Volume 10 dB step (Lch)

Step (10dB)	data			SW No.							
	5	6	7	501	502	503	504	505	506	507	508
0	0	0	1								
10	1	0	0		1						
20	0	1	0			1					
30	1	1	0				1				
40	0	0	1					1			
50	1	0	1						1		
60	0	1	1							1	
70	1	1	1								1

(7) Bass

Step (2dB)	data				SW No.							
	5	6	7	8	301	302	303	304	305	306		
+10	1	1	0	0				1	1	1		
8	0	0	1	0	1			1	1	1		
6	1	0	1	0	1		1		1	1		
4	0	1	1	0	1	1			1	1		
2	1	1	1	0	1	1				1		
0	0	0	0	1						1	1	
−2	1	0	0	1	1	1						1
4	0	1	0	1	1	1			1			1
6	1	1	0	1	1		1		1			1
8	0	0	1	1	1			1	1			1
10	1	0	1	1				1	1			1

(8) Treble

Step (2dB)	data				SW No.							
	1	2	3	4	310	311	314	316	317	318	319	320
+10	1	1	0	0		1						1
8	0	0	1	0		1					1	
6	1	0	1	0		1				1		
4	0	1	1	0		1			1			
2	1	1	1	0		1		1				
0	0	0	0	1		1	1					
−2	1	0	0	1	1		1	1				
4	0	1	0	1	1		1		1			
6	1	1	0	1	1		1			1		
8	0	0	1	1	1		1				1	
10	1	0	1	1	1		1					1

(9) High Filter

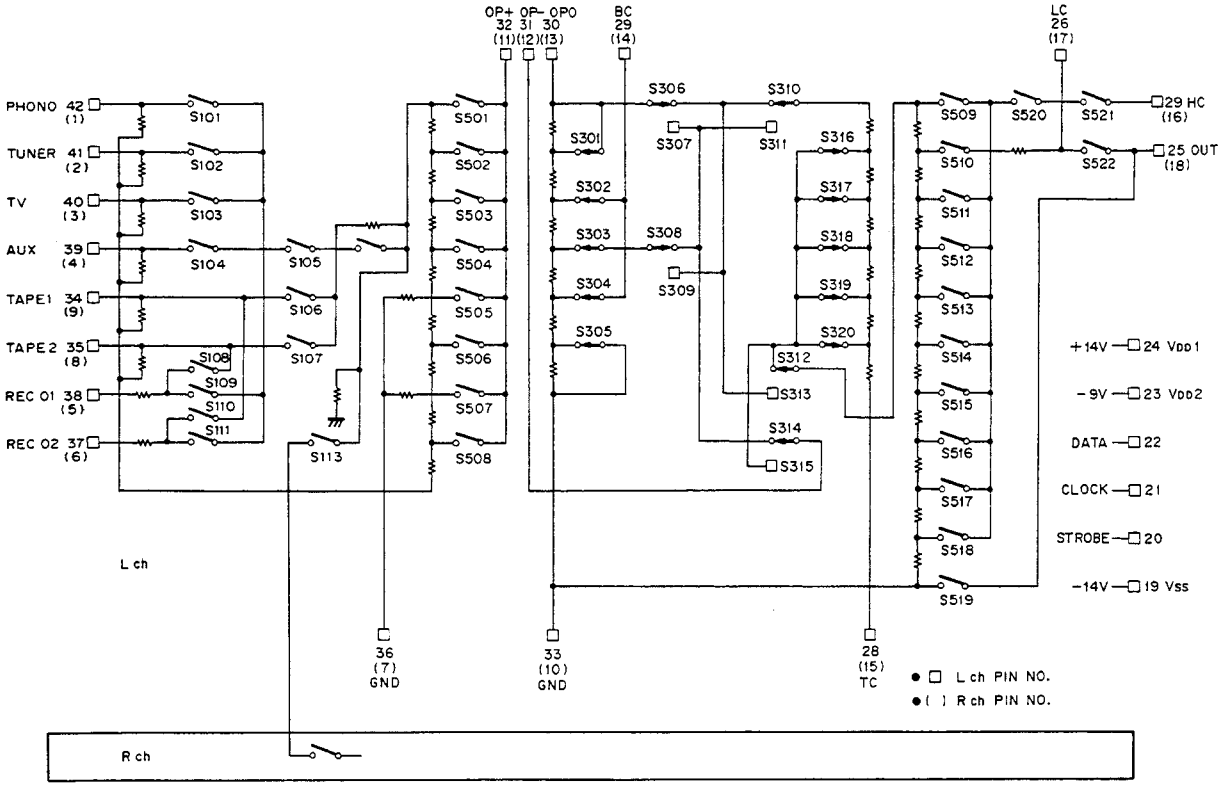
	data	SW No.	
	15	520	521
ON	1	0	1
OFF	0	1	0

(10) Low Filter

	data	SW No.
	8	522
ON	1	0
OFF	0	1

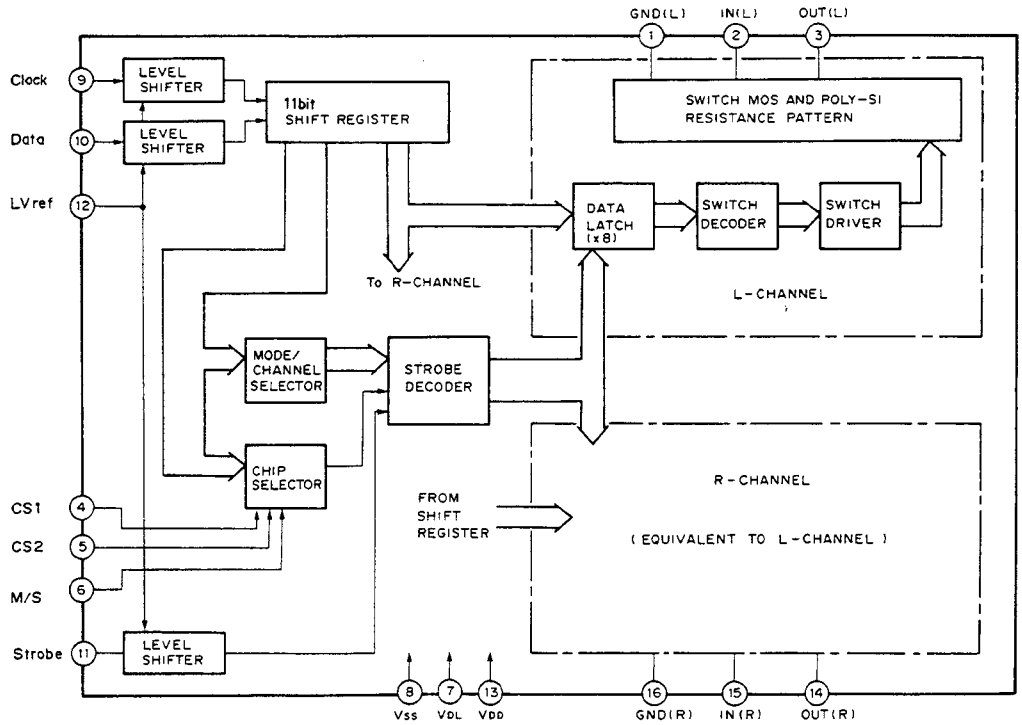
* With the logic table 1 → SW out high
0 or □ → low

■ CX-789 Analog System Circuit



■ CX7978 TERMINAL DESCRIPTION

■ Block Diagram



Terminal No.	Symbol	Input / Output	Terminal description	Terminal No.	Symbol	Input / Output	Terminal description
1	GND (L)	—	Audio signal reference potential (0V) of Lch	7	VDL	—	Logic system power supply ([VSS + 5] V).
2	IN (L)	I	Audio signal input of Lch	8	VSS	—	IC board potential (−14V)
3	OUT (L)	O	Audio signal output of Lch	9	Clock	I	Clock for serial data fetching It fetches at its rising. It is of 11-bit or 8-bit structure.
4	CS1	I	Chip selection terminal Chip is selected when bit 9th and bit 10th of the serial data are coincided with the levels of CS1 = bit 9th and CS2 = bit 10th. However, "0"= CS1, CS2 = VSS; "1"= CS1, CS2 = OPEN or VDL	10	Data	I	Serial data of 11 bits or 8 bits.
5	CS2			11	Strobe	—	Mode setting of the analog switch The serial datra which is fetched into the IC is latched by rising of the strobe pulse and the switch pertaining to that data is turned ON.
				12	LVref	I	Sets the input level range of the control signal (Clock, Data and Strobe)
6	M/S	I	Serial data input mode selection. When this terminal is fixed to VSS, it becomes an 8 bit-input, and when it is opened (or set to VDL), it becomes an 11 bit-input.	13	VDD	—	Switch driver power supply (+14V)
				14	OUT (R)	O	Rch audio signal output
				15	IN (R)	I	Rch audio signal input
				16	GND (R)	—	Rch audio signal reference potential (0V)

* In the VSX-5000 and 4000, data is transmitted with 8-bit mode.

① ②	③	④ ⑤	⑥	⑦	⑧
2dB DATA		8dB DATA		L	R

8 bit

① ②	③	④ ⑤	⑥	⑦	⑧	⑨	⑩	⑪
2dB DATA		8dB DATA		L	R	CS1	CS2	1

11 bit

• 2 dB Data

Position	Hexadicimal	bit		Switch			
		②	①	1	2	3	4
0dB	0	0	0	1			
2dB	1	0	1		1		
4dB	2	1	0			1	
6dB	3	1	1				1

• 8 dB Data

Position	Hexadicimal	bit				Switch												
		⑥	⑤	④	③	5	6	7	8	9	10	11	12	13	14	15	16	17
0dB	0	0	0	0	0	1			1									
8dB	1	0	0	0	1		1	1										
16dB	2	0	0	1	0		1		1	1								
24dB	3	0	0	1	1		1		1		1							
32dB	4	0	1	0	0		1		1			1						
40dB	5	0	1	0	1		1		1				1					
48dB	6	0	1	1	0		1		1					1				
56dB	7	0	1	1	1		1		1						1			
64dB	8	1	0	0	0		1		1							1		
72dB	9	1	0	0	1		1		1								1	
∞	A	1	0	1	0		1		1									1

● L/R (When 8 bits: M/S="L")

Position	bit	
	⑧	⑦
L+R	0	0
R	0	1
L	1	0
No change	1	1

● L/R (When 11 bits: M/S="H")

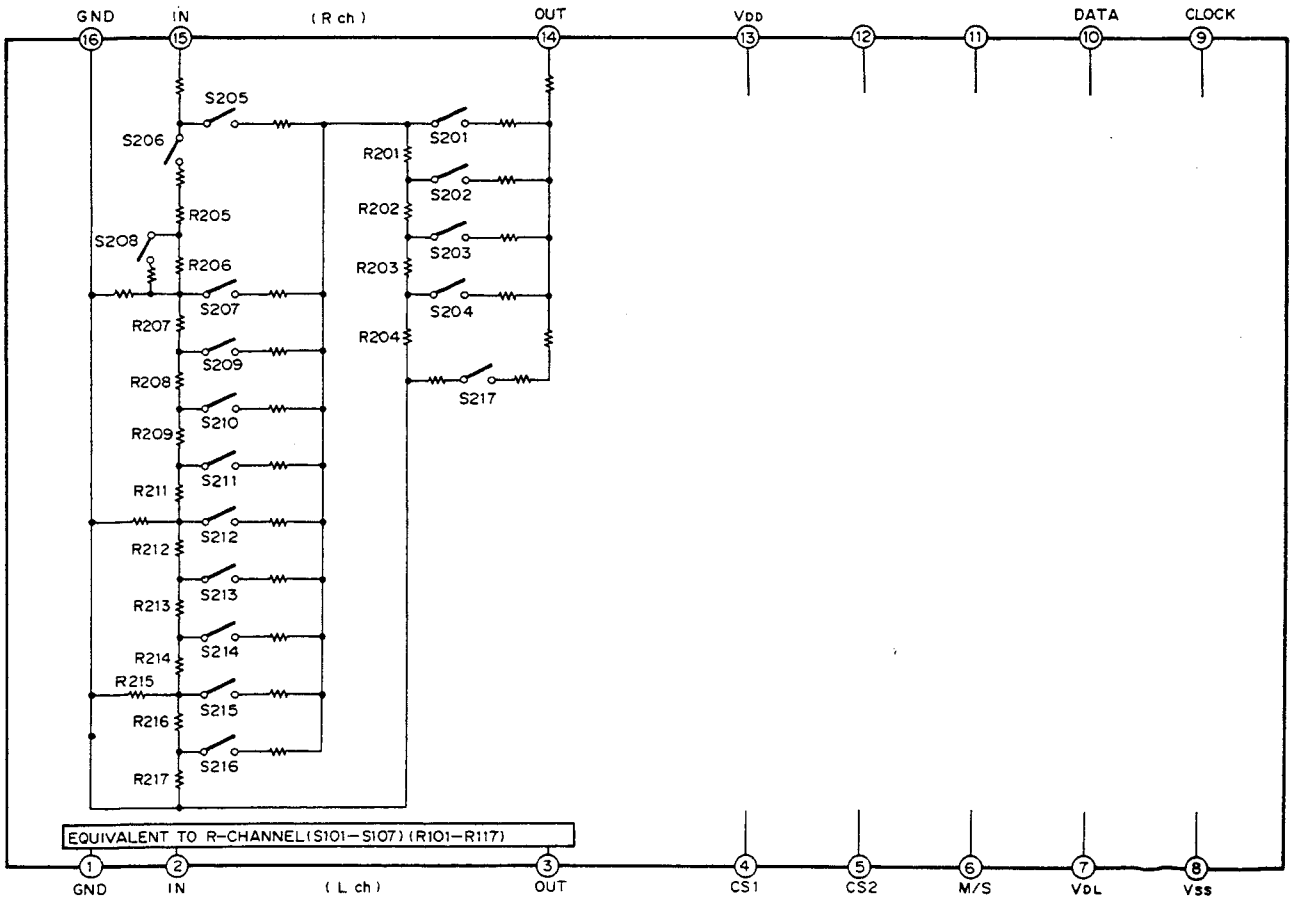
Position	bit	
	⑧	⑦
No change	0	0
L	0	1
R	1	0
L+R	1	1

■ Audio Circuit of 2 dB and 8dB Step Volume Section of CX-7978

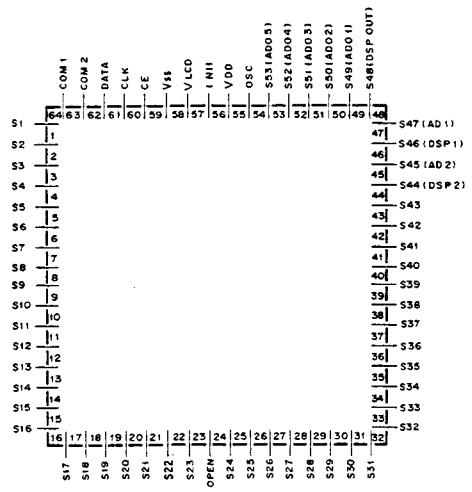
● Switch number corresponding table

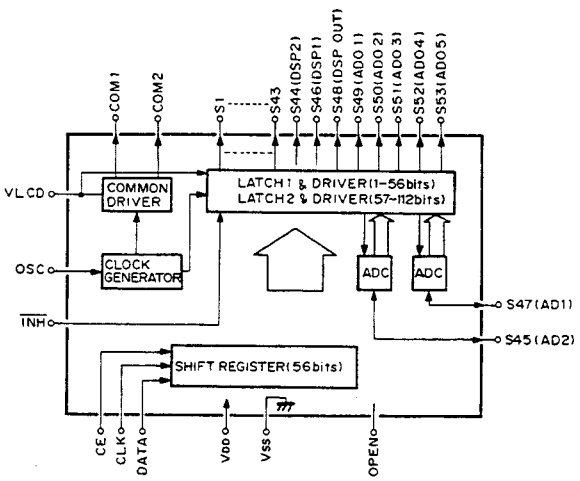
Switch No. in 2dB and 8dB data table / Switch No. in Fig. 0-0	SW1 to SW17
Lch	SW101 to SW117
Rch	SW201 to SW217

● Block Diagram



■ LC7580 TERMINAL DESCRIPTION

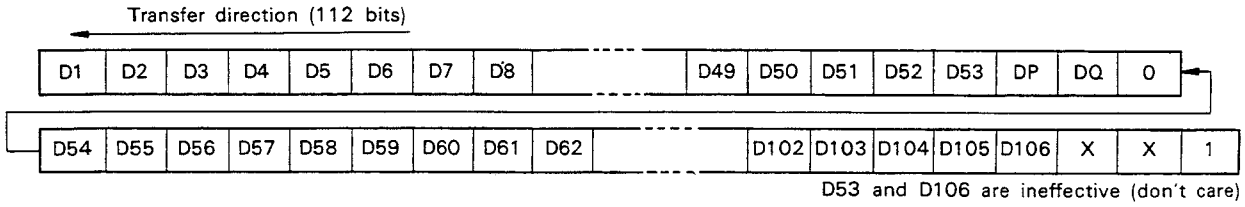




Terminal No.	Symbol	Terminal description	Terminal No.	Symbol	Terminal description
1	S1	Segment output terminal	33	S32	Segment output terminal
2	S2		34	S33	
3	S3		35	S34	
4	S4		36	S35	
5	S5		37	S36	
6	S6		38	S37	
7	S7		39	S38	
8	S8		40	S39	
9	S9		41	S40	
10	S10		42	S41	
11	S11		43	S42	
12	S12		44	S43	
13	S13		45	S44 (DSP2)	Segment output or DSP input terminal
14	S14		46	S45 (AD2)	Segment output or AD input terminal
15	S15		47	S46 (DSP1)	Segment output or DSP input terminal
16	S16		48	S47 (AD1)	Segment output or AD input terminal
17	S17		49	S48 (DSP OUT)	Segment output or DSP output terminal
18	S18		50	S49 (AD01)	Segment output or AD output terminal
19	S19		51	S50 (AD02)	
20	S20		52	S51 (AD03)	
21	S21		53	S52 (AD04)	
22	S22		54	S53 (AD05)	
23	S23		55	OSC	Oscillating terminal
24	OPEN	No connection	56	VDD	Power supply
25	S24	Segment output terminal	57	$\overline{INH}$	Display extinguishing input terminal
26	S25		58	VLCD	LCD bias voltrage setting terminal
27	S26		59	VSS	Power supply
28	S27		60	CE	Chip enable input terminal
29	S28		61	CLK	Clock data input terminal
30	S29		62	DATA	Serial data input terminal
31	S30		63	COM2	Common output terminal (Use only when 1/2 duty)
32	S31		64	COM1	Common output terminal (Use COM1 only when 1/1 duty)

■ Data transferring format when 1/2 duty (112 bits)

- When 1/2 duty (56 bits suffice for transfer data if display segment is below 52 segments. In addition, the transfer format is the same as 1/1 duty, and alteration of only D54 to D106 cannot be made.)

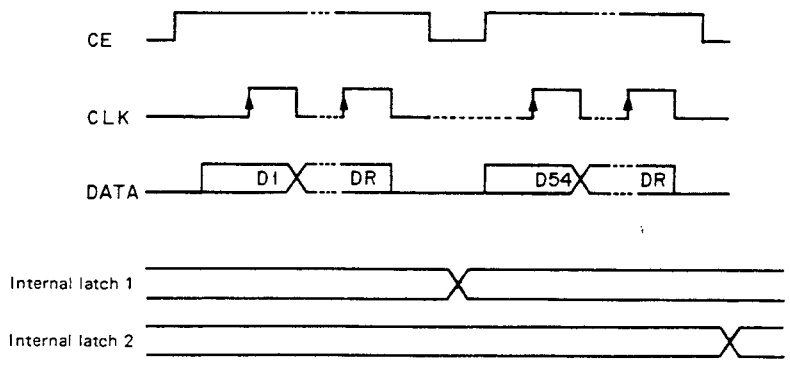

Transfer direction (112 bits)
D1 D2 D3 D4 D5 D6 D7 D8 D49 D50 D51 D52 D53 DP DQ 0
D54 D55 D56 D57 D58 D59 D60 D61 D62 D102 D103 D104 D105 D106 X X 1
D53 and D106 are ineffective (don't care)

D1 to D53: Display data (when 1/1 duty) Lights up at "1"
D1 to D106: Display data (when 1/2 duty)
Extinguishes at "0"

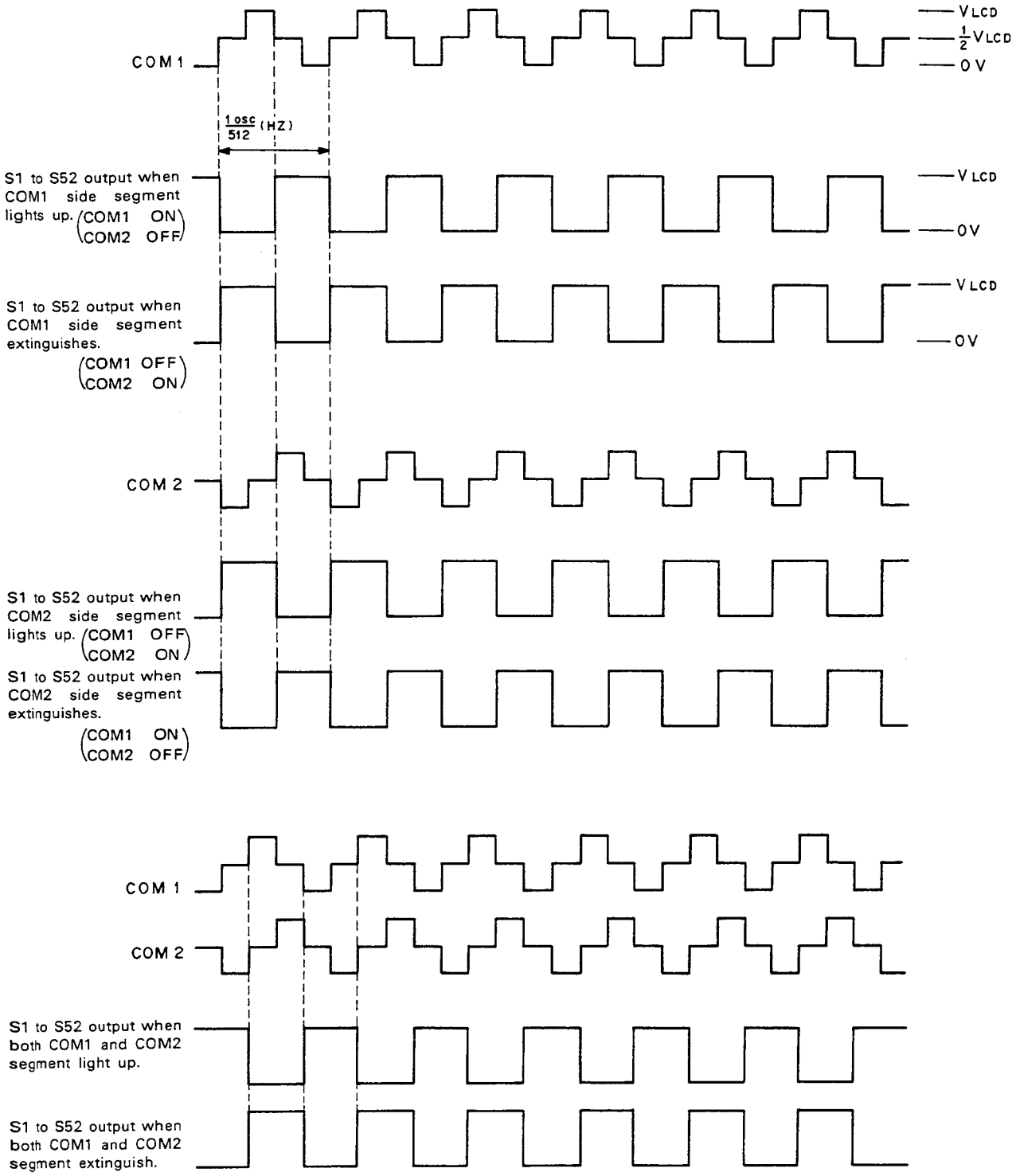
Note: When selecting AD or DSP
1/1 duty: D46 to D53 are ineffective (don't care)
1/2 duty: D88 to D106 are ineffective (don't care)

DP: Driving method selection bit
"1/2 duty at "1"
"1/1 duty at "0"
DQ: AD or DSP function selection bits
AD or DSP function at "1"
Segment output at "0"
X: don't care

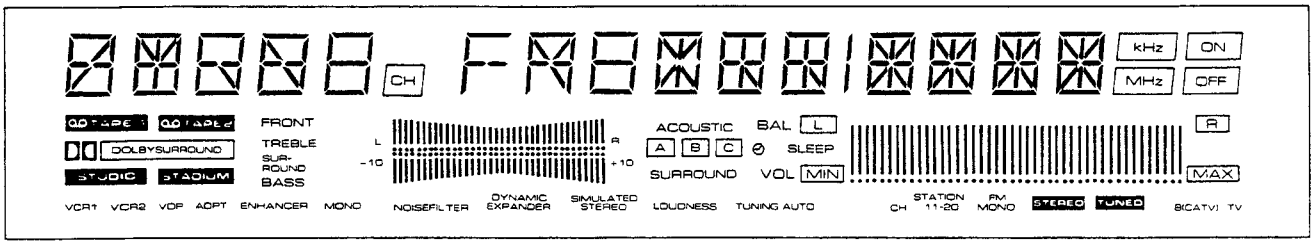
■ Serial data when duty (112 bits)



■ Output waveform during 1/2 duty

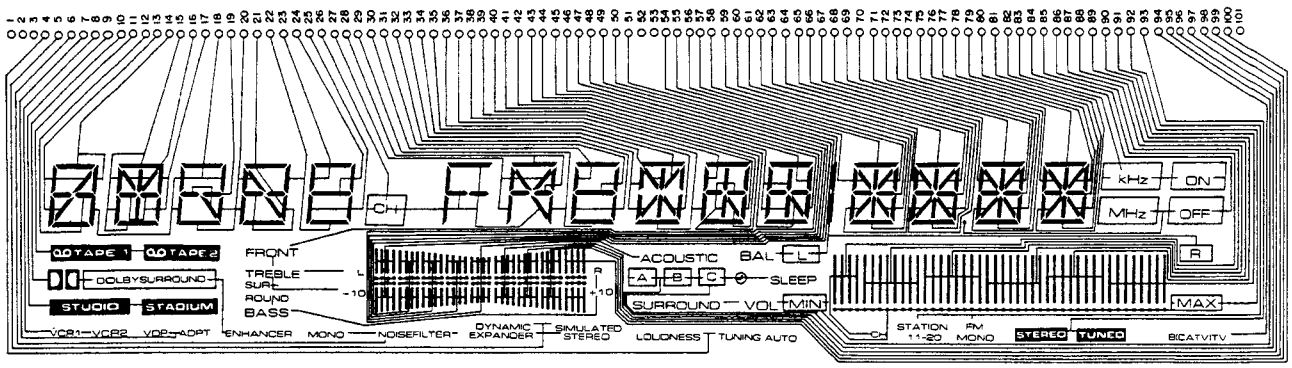

COM 1
VLCD
1/2 VLCD
0 V
1 osc / 512 (HZ)
S1 to S52 output when COM1 side segment lights up. (COM1 ON / COM2 OFF)
VLCD
0V
S1 to S52 output when COM1 side segment extinguishes. (COM1 OFF / COM2 ON)
VLCD
0V
COM 2
S1 to S52 output when COM2 side segment lights up. (COM1 OFF / COM2 ON)
S1 to S52 output when COM2 side segment extinguishes. (COM1 ON / COM2 OFF)
COM 1
COM 2
S1 to S52 output when both COM1 and COM2 segment light up.
S1 to S52 output when both COM1 and COM2 segment extinguish.

■ LCD displayer

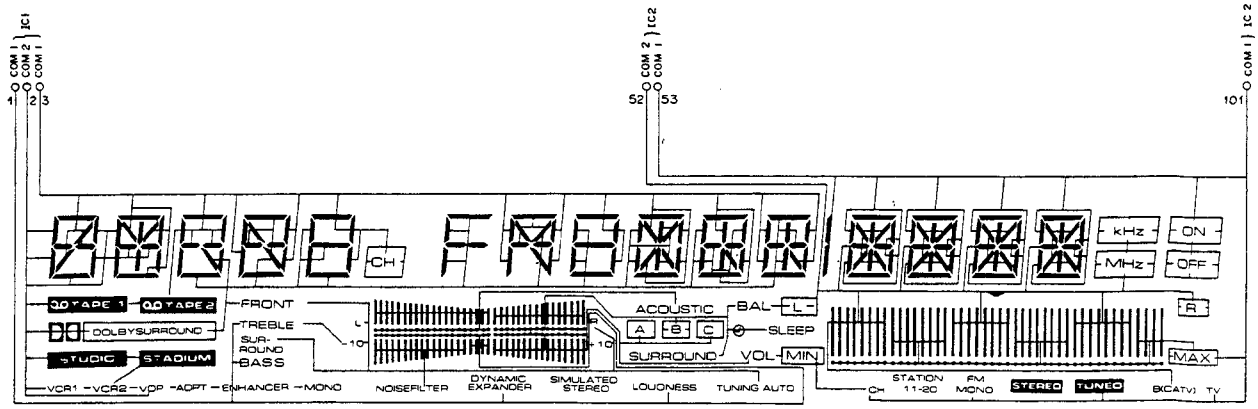


NOTE: The indication of DYNAMIC EXPANDER in the figure becomes that of STEREO WIDE in the VSX-4000 (BK).

■ LCD displayer (Segment pattern)

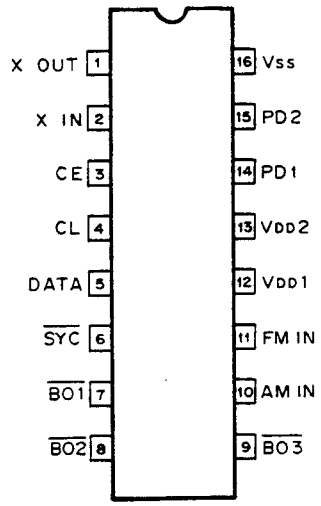


■ LCD displayer (Common pattern)

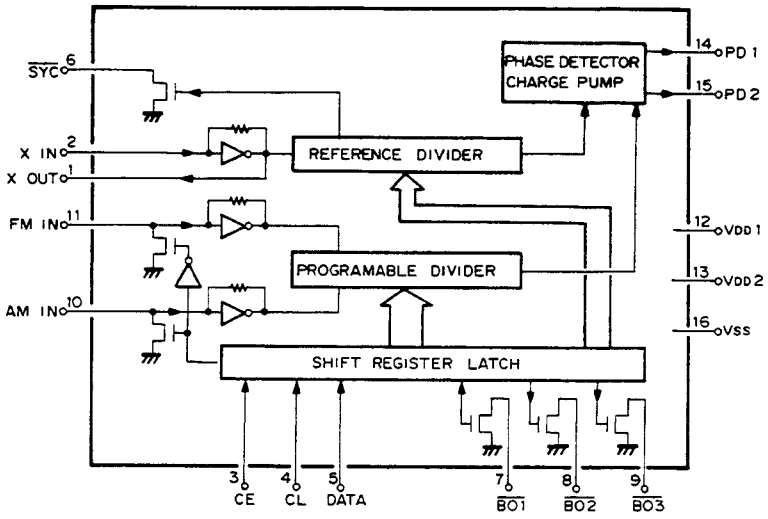


NOTE: * The segment of terminals 4 to 51 is indicated with the combination of those and COM terminals 1 to 3.
* Moreover, the segment of terminals 54 to 100 is indicated with the combination of those and COM terminals of 52, 53, and 101.

■ LM7001 TERMINAL DESCRIPTION



■ Equivalent circuit block diagram



Terminal No.	Symbol	Terminal description	Terminal No.	Symbol	Terminal description
1	X OUT	Crystal oscillator (7.2MHz) output	9	$\overline{BO3}$	Band data output
2	X IN	Crystal oscillator (7.2MHz) input	10	AM IN	AM Local oscillation signal input terminal
3	CE	Chip enable signal input	11	FM IN	FM local oscillation signal input terminal
4	CL	Clock data input terminal	12	VDD 1	Power supply
5	DATA	Data input	13	VDD 2	Back-up power supply
6	$\overline{SYC}$	Clock output terminal for controller (400kHz)	14	PD 1	Change pump output
7	$\overline{BO1}$	Band data output (FM = "L' ')	15	PD2	Charge pump output
8	$\overline{BO2}$	Band data output (AM = "L' ')	16	VSS	Power supply

■ Data input

DO	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	TO	T1	B0	B1	B2	TB	R0	R1	R2	S

1) D0(LSB) to D13(MSB): Dividing figure data Use D0 to D13 for FM IN and D4 to D13 for AM IN.

ex.

	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	
During FM	1	0	1	0	0	0	0	0	0	1	0	1	1	1	⟹ FM IN dividing figure = 14853
	LSB													MSB	
During AM					0	0	0	0	0	1	0	1	1	1	⟹ AM IN dividing figure = 928
					LSB									MSB	

2) T0 and T1: Should be used for testing of LSI (0,0).
3) B0 to B2 and TB: Band data and time base data

Input				Output		
B0	B1	B2	TB	$\overline{BO1}$	$\overline{BO2}$	$\overline{BO3}$
0	0	0	0	*	*	*
0	0	1	0	0	0	1
0	1	0	0	0	1	0
0	1	1	0	0	1	1
1	0	0	0	1	0	0
1	0	1	0	1	0	1
1	1	0	0	1	1	0
1	1	1	0	1	1	1
0	0	0	1	TB	*	*
x	1	0	1	TB	1	0
x	0	1	1	TB	0	1
x	1	1	1	TB	1	1
1	0	0	1	TB	0	0

*: It is determined by R0 to R2. x: Don't care. TB: 8 Hz

NOTE: In the VSX-5000 (BK) when its input is "0110", it is used in FM mode and when "1000" it is used in AM mode.

4) R0 to R2: Reference frequency data

R0	R1	R2	fref	$\overline{BO1}$	$\overline{BO2}$	$\overline{BO3}$
0	0	0	100kHz	1	1	0
0	0	1	50kHz	1	1	0
0	1	0	25kHz	1	1	0
0	1	1	5kHz	0	0	1
1	0	0	10kHz	1	0	1
1	0	1	9kHz	1	0	1
1	1	0	1kHz	0	1	1
1	1	1	5kHz	0	0	1

5) S: Divider selection data
"1": FM IN and "0": AM IN

6) The VSX-5000 (BK) is used in FM mode where fref is 25 kHz, is used in AM mode of 9 kHz where fref is 10 kHz, and is used in AM mode of 10 kHz where fref is 9 kHz.

■ PD3068 TERMINAL DESCRIPTION

Terminal No.	Name	Function	I/O	ACT	Terminal No.	Name	Function	I/O	ACT
1	VSS	GNDterminal	—	—	64	G0	(LSB)	I	L
2	$\overline{RES}$	Reset input	I	L	63	G1			
3	$\overline{INT}$	Remote control input	I	L	62	G2			
4	$\overline{STBY}$	Standby input	I	L	61	G3	Key matrix input		
5	XTAL	Connect a 4MHz crystal oscillator between terminals	—	—	60	G4			
6	EXTAL		—	—	59	G5			
7	NUM	Connect to GND	—	—	58	G6			
8	TIMER	Connect to GND	—	—	57	G7	(MSB)		
9	A7	(No use) NC	O	—	56	F7	(No use) NC (MSB)	O	L
10	A6	FM AUTO (L) / MONO (H)	O		55	F6	Key matrix output		
11	A5	AM 9k (H) / 10k L)	I		54	F5			
12	A4	FM stereo mode	I	H	53	F4			
13	A3	FM ANT-A (L) / -B (H)	O		52	F3			
14	A2	Tuning STOP REQ	I	H	51	F2			
15	A1	LM7001 (PLL) CE	O	H	50	F1			
16	A0	TC9163N STROBE	O	H	49	F0	(LSB)		
17	B7	CX780 strobe	O	H	48	E7	Serial data output*3	O	H
18	B6	VCR2 REC OUT	O	L	47	E6	Clock output*3	O	H
19	B5	VCR1 REC OUT	O	L	46	E5	RF CONV VIDEO (L) / TV (H)	O	
20	B4	S/S control	O	L	45	E4	Power relay CONTROL	O	H
21	B3	S/W control	O	H	44	E3	LC7580 CE1	O	H
22	B2	$\overline{S/W}$	O	L	43	E2	LC7580 CE2	O	H
23	B1	Serial data output*1	O	H	42	E1	LC7580 $\overline{INH1,2}$	O	L
24	B0	Clock output*1	O	H	41	E0	(No use) NC	O	
25	C7/TX	Serial data output*2	O		40	D7	(No use) (Terminated to GND)	I	
26	C6/RX	PD0012A $\overline{CE}$	O	L	39	D6/INT2			
27	C5/$\overline{CK}$	Clock output*2	O	L	38	D5			
28	C4	(No use) NC	O		37	D4	AC pulse input	I	H
29	C3	STUDIO control	O	L	36	D3	Speaker-B surround	I	L
30	C2	STADIUM control	O	L	35	D2	Model 5000 (L) / 4000 (H)	I	
31	C1	DOLBY control	O	L	34	D1	Model J (H) / other (L)	I	
32	C0	CX7978 strobe	O	H	33	VCC	Power supply +4.8V		

*1 Serial data clock line for CX789 and CX7978
*2 Serial data clock line for LM7001, PD0012A and LC7580
*3 Serial data clock line for TC9163N

■ Control ICs

CX789 (Function, Volume, Balance, Tone, Noise filter, Stereo/Mono)
TC9163N (Function, Tape monitor)
CX7978 (Surround volume)
LM7001 (PLL)
PD0012A (Video function) (TC4066BP control)
IC7580 (LCD driver)
M5201P (Simulated stereo)
TC4066BP (Stereo wide, VCR REC, Surround function, and Video function) are switched over by the output of the PD0012A.

■ Main unit key

IN / OUT	G7	G6	G5	G4	G3	G2	G1	G0
F6	ACOUSTIC MEMORY	ACOUSTIC SELECT	TREBLE −	BASS +	TREBLE +	MUTE	VOLUME −	VOLUME +
F5	FREQ/ CH	TUNING −	BASS −	TUNING +	SURROUND −	SURROUND +	BALANCE L	BALANCE R
F4	*4 EXPANDER	AUTO/ MANUAL	DIRECT	STATION FREQ/ NAME	TEST	FM MODE AUTO/ MONO	FM ANT A/B	TV ANT VIDEO/TV
F3	VIDEO SIGNAL SELECTOR	FM	ACCESS AM	1	2	3	4	5
F2	POWER	MEMORY	1 to 10/ 11 to 20	6	7	8	9	10
F1	VIDEO ADAPTOR	VIDEO ENHANCER	VCR MODE STEREO/ MONO	VCR NOISE FILTER	SIMULATED STEREO	VCR1	VCR2	VCR3/ VDP
F0	SURROUND OFF	STUDIO	STADIUM	DOLBY	TAPE1	TAPE2	CD	PHONO

All keys

*4 STELEO WIDE at 4000 mode

■ Remote control key

Tuner Section [COMPO CODE:A4]

Code	Name	Key corresponding to main unit	Code	Name	Key corresponding to main unit
00	0	10	09	9	9
01	1	1	0D	FM	FM
02	2	2	0E	AM	AM
03	3	3	10	Memory +	TUNE + *5
04	4	4	11	Memory −	TUNE − *5
05	5	5	13	Band	
06	6	6	1E	MPX	FM AUTO/MONO
07	7	7	40	Memory selection	1 to 10/11 to 20
08	8	8			

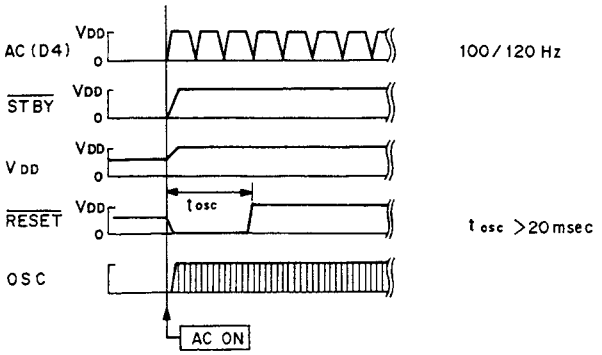
*5 The TUNE +/− key of the main body serves both as itself and CH +/− key.

AMP Section [COMPO CODE:A5]

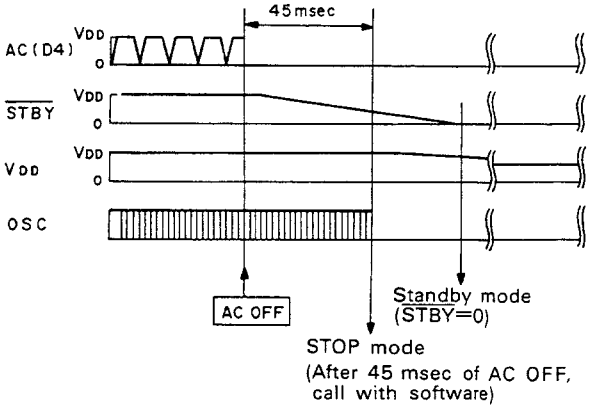
Code	Name	Key corresponding to main unit	Code	Name	Key corresponding to main unit
0A	VOL +	VOL +	42	SURROUND LEVEL ÷	SURR ÷
0B	VOL ÷	VOL ÷	47	TUNER	
0D	VDP	VCR3/VDP	48	SLEEP	
0E	VIDEO 1	VCR2	49	BAL R	BAL R
0F	(VTR) 2	VCR1	4A	BAL CENTER	
12	MUTE	MUTE	4B	BAL L	BAL L
1A	POWER ON		4C	CD	CD
1B	POWER OFF		4D	PHONO	PHONO
1C	POWER ON/OFF	POWER	4E	TAPE	TAPE1
1D	MONITOR	TAPE2	51	MUTE ON	
1F	VIDEO ADAPTOR	VIDEO ADAPTOR	52	MUTE OFF	
40	SURROUND MODE		54	VFUNC	VIDEO SELECTOR
41	SURROUND LEVEL +	SURR +	55	AFUNC	

CODE: HEX Indication

■ Reset timing (Power on reset)



■ Back-up timing



■ Port expander layout (PD0012A port)

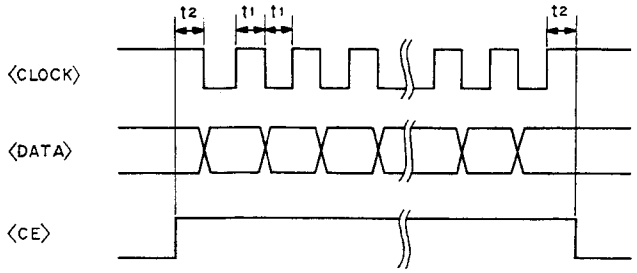
[Video Function Control (TC4066BP)]

PIN	Data No.	Work	PIN	Data No.	Work	PIN	Data No.	Work
4	O_0	VIDEO ADAPTOR	8	O_4	VCR2	13	O_8	VCR1 REC OUT ENHANCER
5	O_1	SOURCE	10	O_5	VCR2 REC OUT NORMAL	14	O_9	MONITOR OUT NORMAL
6	O_2	VCR1	11	O_6	VCR1 REC OUT NORMAL	15	O_{10}	MONITOR OUT ENHANCER
7	O_3	VDP	12	O_7	VCR2 REC OUT ENHANCER	16	O_{11}	(No use)

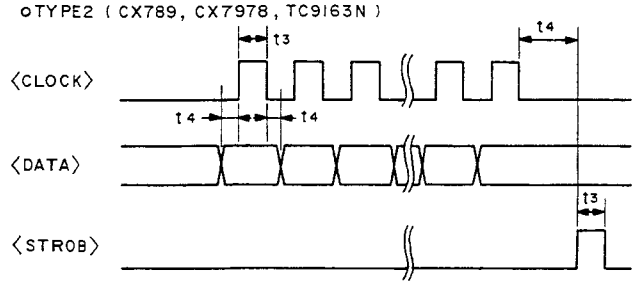
ALL PORT ACTIVE "H"

■ Data output timing

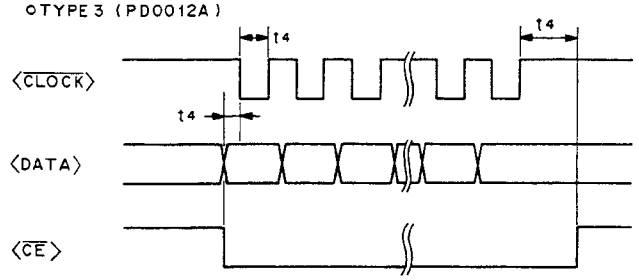
○TYPE1 (LM7001, LC7580 (SCI USE))



○TYPE2 (CX789, CX7978, TC9163N)

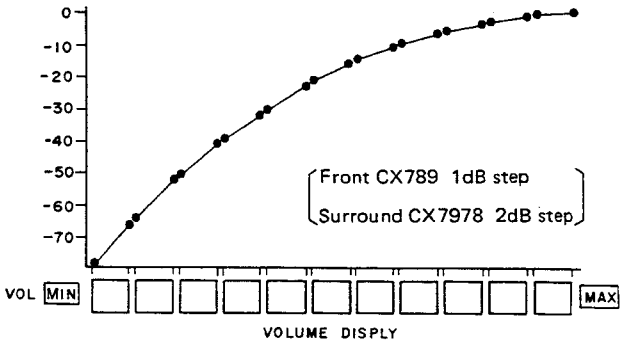


○TYPE3 (PD0012A)

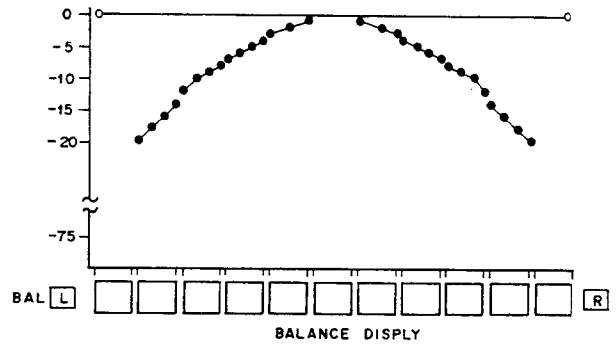


Pulse width	Typ.	Unit
t1	32	μSec
t2	100	
t3	230	
t4	110	

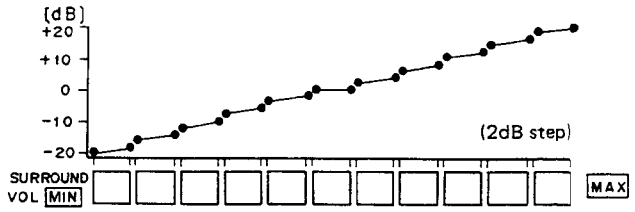
■ Volume display vs. Attenuating amount



■ Balance display vs. Attenuating amount



■ Surround volume display vs. Attenuating amount of master volume



■ Test mode (With TEST key of key matrix)

Adjusting data set

CH No.	Data	CH No.	Data
1	87.5MHz	11	594/600kHz
2	89.0MHz	12	603/610kHz
3	90.0MHz	13	954/1000kHz
4	94.0MHz	14	963/1010kHz
5	97.6MHz	15	999/1050kHz
6	99.0MHz	16	1008/1060kHz
7	101.0MHz	17	1314/1400kHz
8	106.0MHz	18	1395/1490kHz
9	108.0MHz	19	1494/1600kHz
10	531/530kHz	20	1602/1600kHz

(9K/10K)

VOLUME Min
BALANCE Center
SURROUND Mid
TONE Flat
By the above-mentioned 4 modes, the UP/DOWN speed becomes optimum.

■ Simultaneous pressing (Demonstration mode)

Simultaneous key pressing other than the below combination is not accepted.

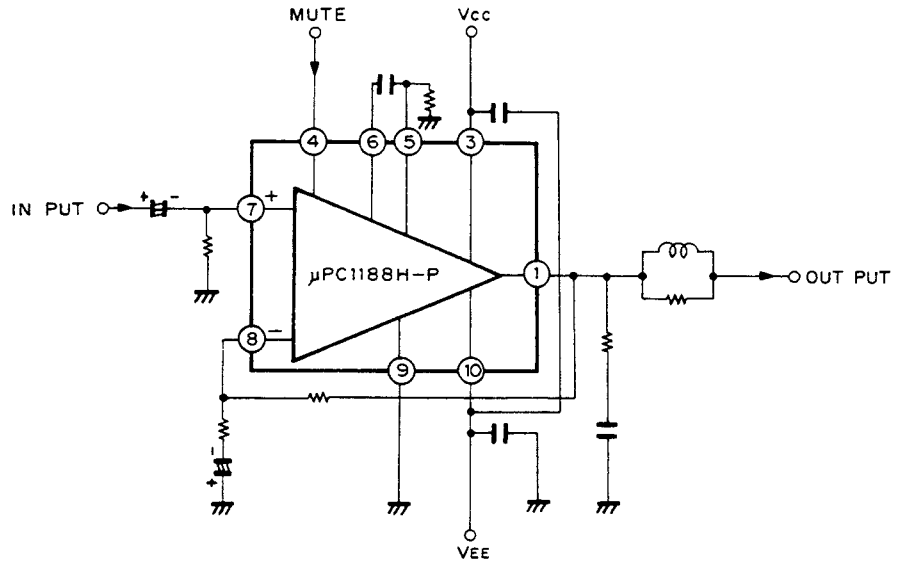
* BALANCE L+R → BALANCE Center
* TREBLE UP+DOWN → TREBLE Flat
* BASS UP+DOWN → BASS Flat

With POWER OFF (STANDBY state)

* TV ANTENNA+Power → Demonstration mode

■ μPC1188H-P

Block Connection Diagram



Terminal description

Terminal	Standard voltage (V)	Terminal name	I/O	Function and operation
1	0	OUTPUT	Output	Output terminal
2	—	NC		NC
3	22	+VCC		Positive power supply voltage terminal
4	H: 5.9, L: 0	MUTING	Input	Muting input H: MUTE OFF, L: MUTE ON
5	0.5	PHASE COMP		Capacity connecting terminal for phase compensation
6	−20.3	PHASE COMP		
7	0	INPUT	Input	Input terminal
8	0	NFB	Input	NFB input terminal
9	0	GND		GND
10	−22	−VCC		Negative power supply voltage terminal

16. ADJUSTMENTS

16.1 TUNER SECTION

FM Tuner Section

- Connect the FM signal generator (FM SG) to the FM ANTENNA 300Ω terminal through a 300Ω dummy antenna.
- Set the AUTO/MANUAL switch to the MANUAL position and the FUNCTION switch to the FM.

FM MONO ADJUSTMENT

Step	FM SG (1 kHz±75 kHz dev.)		Frequency display	Adjustment point	Adjustment procedure
	Frequency	Level			
1	No signal		87.5 MHz	—	Check pin 73 (3.4±1.5V) of tuner assembly.
2			108.0 MHz		Check pin 73 ($8.7^{+2.5V}_{-2.0V}$) of tuner assembly.
3	98 MHz	20~30 dB	98 MHz	T401, L402 T402	Set the output from pin 74 of tuner assembly to maximum level.
4	98 MHz	60 dB	98 MHz	T405	Adjust voltage across pins 76 and 77 of tuner assembly to T meter center. (±10 mV)
5	98 MHz	60 dB	98 MHz	T406	Minimize distortion.
6	Repeat steps 4 and 5 until both specification ratings are satisfied.				

FM MPX ADJUSTMENT

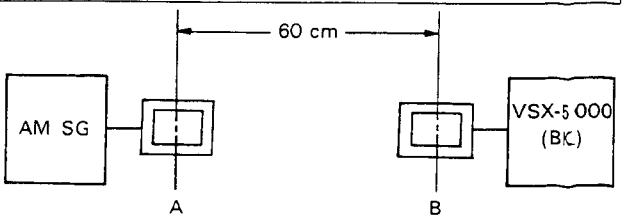
7	98 MHz	80 dB	98 MHz	VR401	Adjust the frequency at pin 75 of tuner assembly to 75.8 kHz (±100 Hz)
	No modulation				
8	98 MHz	60 dB	98 MHz	T402	Minimize distortion in both left and right channel outputs (adjust T402 to within ±90°)
	Stereo modulation*				
9	98 MHz	60 dB	98 MHz	VR402	Maximize separation.
	Stereo modulation*				
10	98 MHz	10 dB	98 MHz	—	Confirm that TUNER IND and STEREO IND are extinguished.
	Stereo modulation*				
* Stereo modulation: Main 1 kHz L+R ±68.25 kHz dev. Pilot 19 kHz±6.75 kHz dev.					

AM (MW) Tuner Section

- Connect loop antenna to the AM signal generator (AM SG), and connect the Loop antenna (of the set) to AM ANTENNA terminal.
- Set the FUNCTION switch to the AM (MW)

Step	AM SG (400Hz, 30% MOD)		Frequency display	Adjustment pint	Adjustment procedure
	Frequency	Level			
1	No signal		531 kHz	L406	Set pin 73 of tuner assembly to 1.2V (±0.05V)
2			1602 kHz	TC402	Set pin 73 tuner assembly to 10.0V (±0.1V)
3	Repeat steps 1 and 2 until both specification ratings are satisfied.				
4	603 kHz	40 dB	603 kHz	T404	Set the output from pin 74 of tuner assembly to maximum level.
5	1395 kHz	40 dB	1395 kHz	TC401	
6	Repeat steps 4 and 5 until both specification ratings are satisfied.				
7	999 kHz	55dB	999kHz	Confirm that TUNER IND becomes lit.	

- The distance between AM SG side loop antenna A and the receiver side (VSX-5000(BK)) loop antenna B, that is, from the center of A side loop antenna to that of B side loop antenna should be 60 cm.



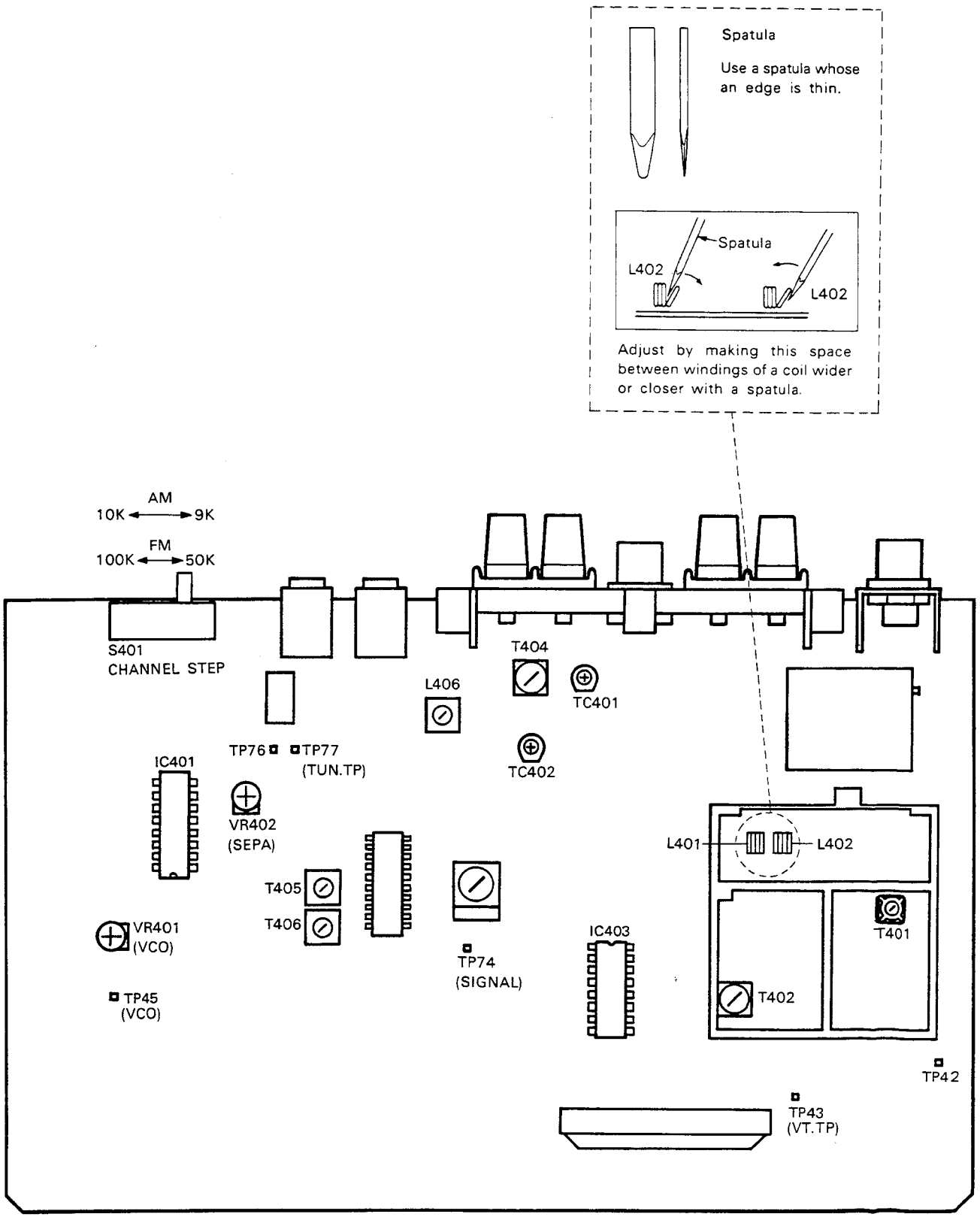


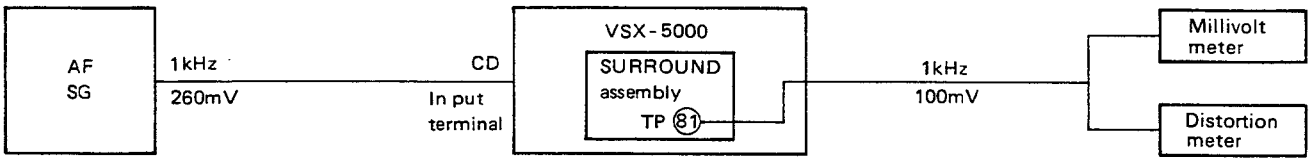
Fig 16-1 Adjustment points

16.2 SURROUND AMP SECTION

• SURROUND LEVEL ADJUSTMENT

Preparation

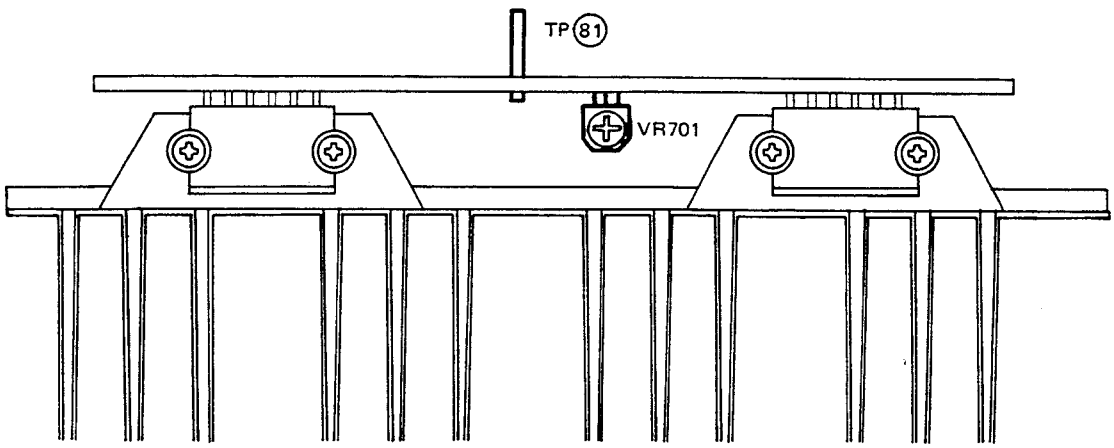
1) Adjust the SURROUND BALANCE VR (VR702) on the rear side to the center clicking position.
2) Connect load (8Ω).
3) Turn the power supply ON.
4) Set the SURROUND MODE to the DD SURROUND (DOLBY).
5) Input sine wave signal of 1kHz, 260mV to the CD input. Lch (or R ch) only.
(Be sure that the small signal assembly is operationg normally.)



Connection diagram

Adjusting method

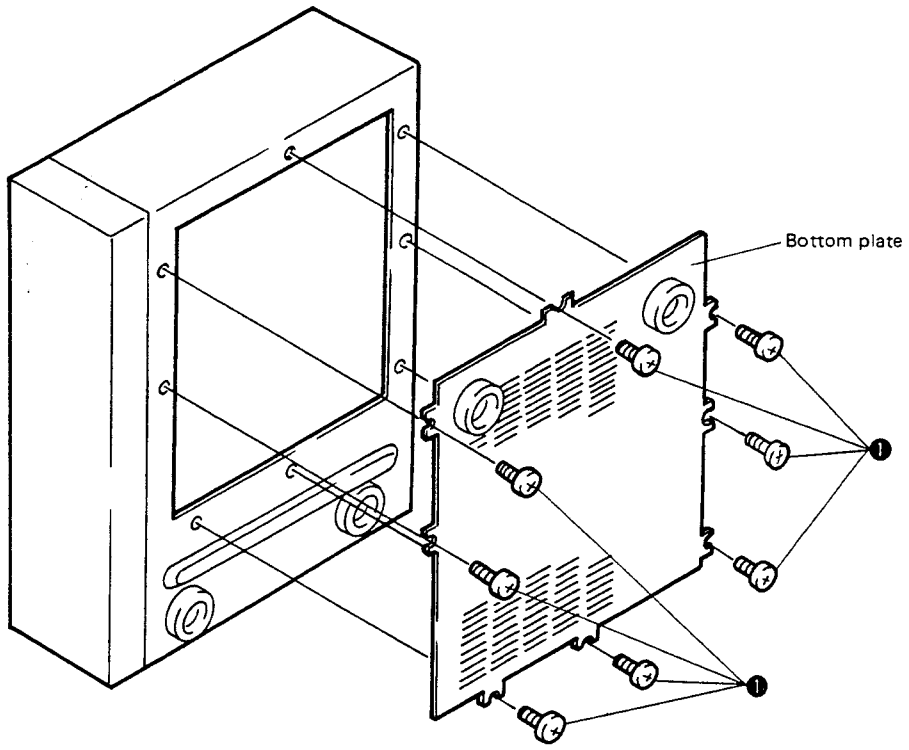
1) Adjust with VR701 (LEVEL) so that the output of TP pin 81 of the SURROUND assembly becomes 100mV ±5mV.



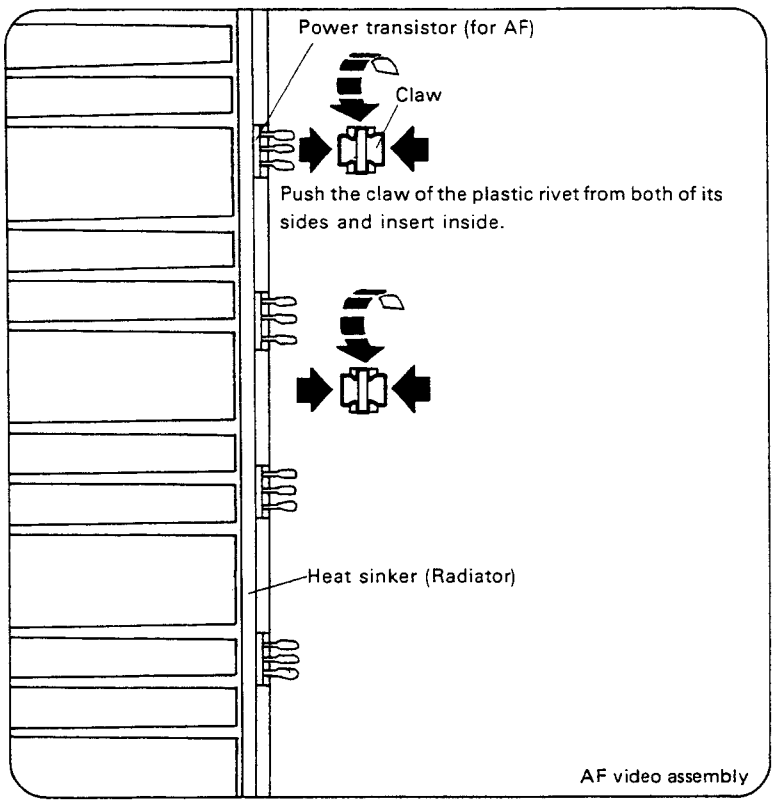
• SURROUND DISTORTION ADJUSTMENT

Preparation

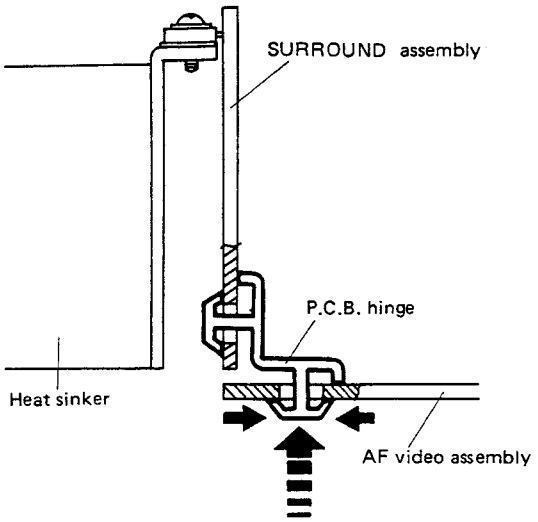
1) Connect load (1W/8Ω).
2) Turn the power supply ON and adjust with the MASTER VOLUME and SURROUND VOLUME so that the output of the power amplifier becomes approximately 2.83V.
3) Turn the power supply OFF.
4) Make the circuit into non-loaded state (open circuit).
5) Remove seven screws ❶ and remove the bottom plate.



6) Remove two claws of the PCB hinge which are hooked onto the AF video assembly from the AF video assembly.

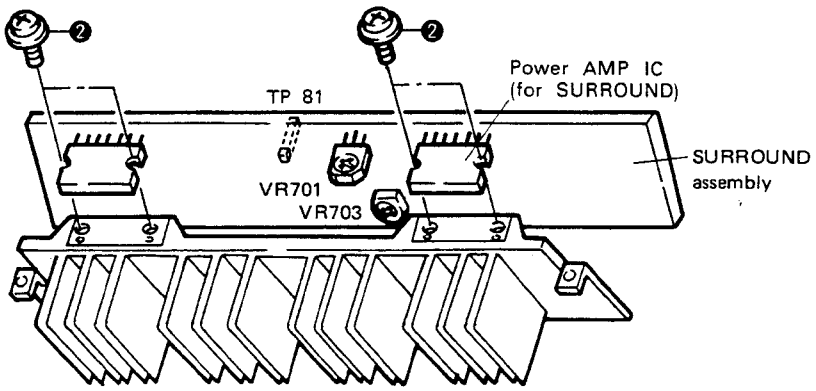

Power transistor (for AF)
Claw
Push the claw of the plastic rivet from both of its sides and insert inside.
Heat sinker (Radiator)
AF video assembly

The diagram viewed from bottom



The diagram viewed from the side.

7) Remove four screws ❷ of the power AMP IC (for SURROUND) and remove the SURROUND assembly.

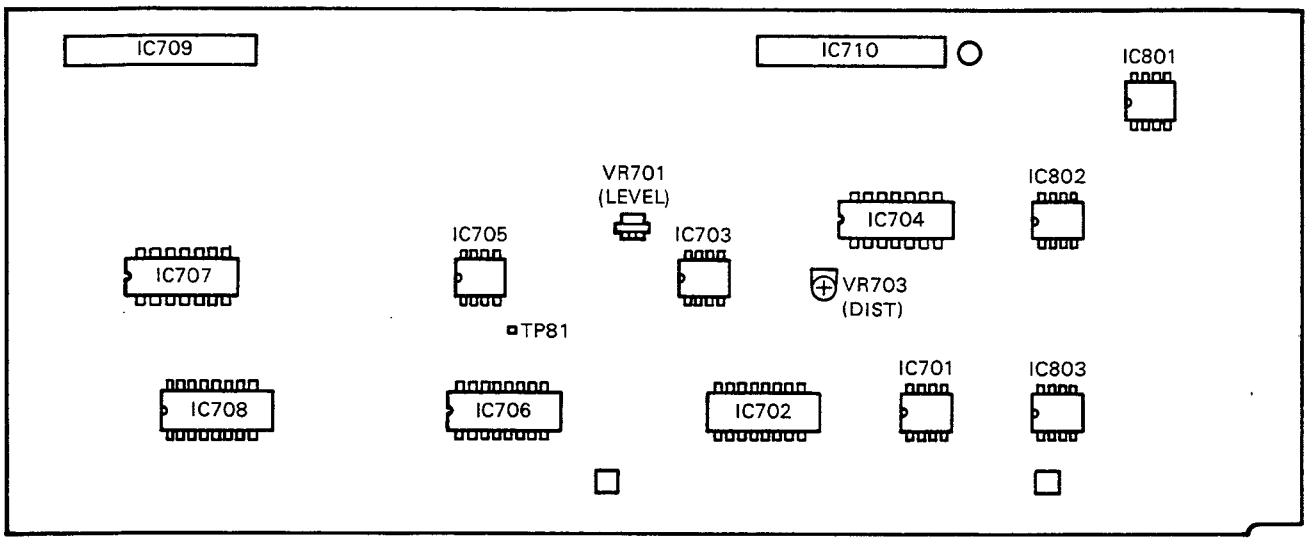


8) Turn the power supply ON.
9) Set the SURROUND MODE to the DD SURROUND (DOLBY).
10) Input sine wave signal of 1kHz, 260mV to the CD input. L ch (or R ch)

(Be sure that the small signal assembly is operating normally.)

Adjusting method

Adjust with VR703 so that the distortion of TP pin 81 becomes minimum.

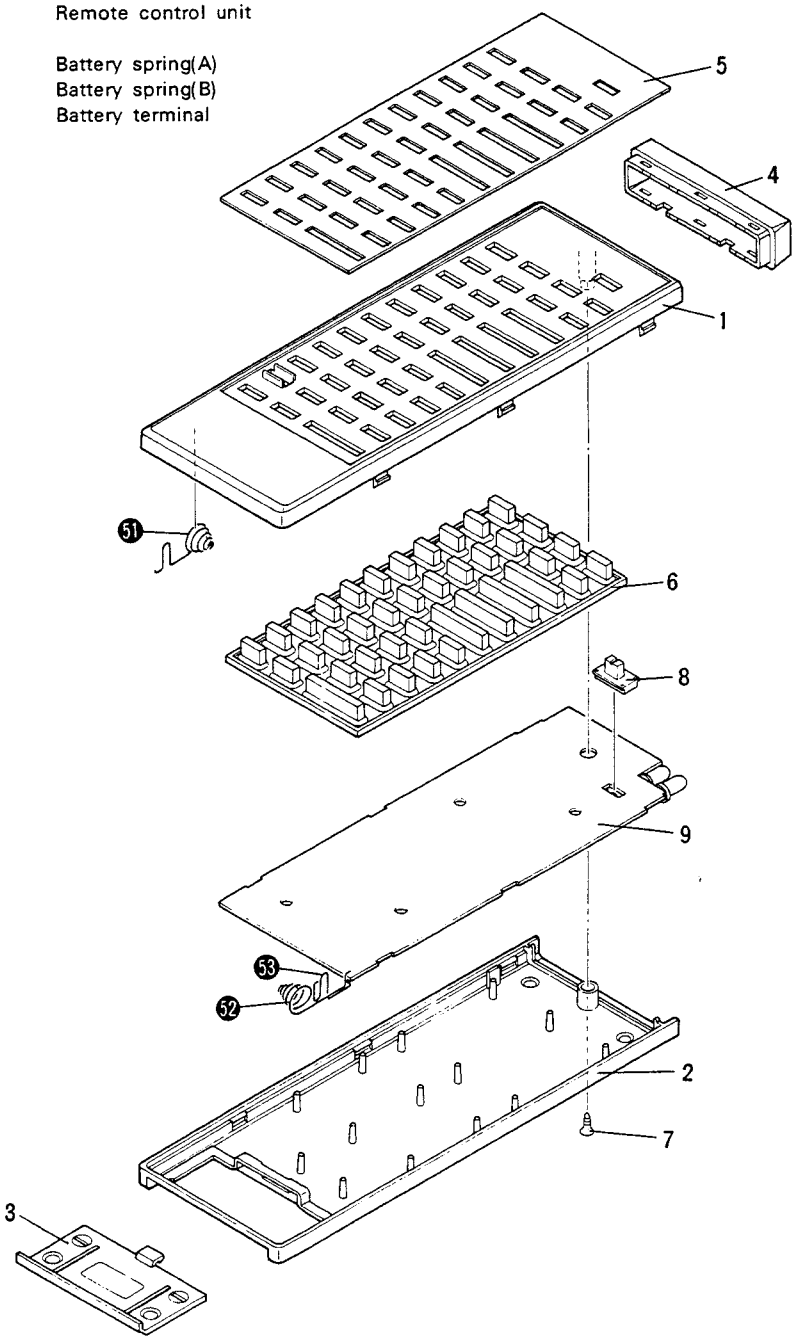


17. REMOTE CONTROL UNIT

17.1 EXPLODED VIEW

Parts List

Mark	No.	Part No.	Description
	1	AZH1019	Case(A)
	2	AZH1016	Case(B)
	3	AZH1017	Case(C)
	4	AZN1200	Filter
	5	AZA1037	Plate
	6	AZA1036	Rubber switch
	7	AZB1057	Screw
	8	AZS1021	Knob(POWER)
	9		Remote control unit
	51		Battery spring(A)
	52		Battery spring(B)
	53		Battery terminal



17.2 ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	*56 × 10¹*	*561 .....*	*RD¼PS 5 6 1 J*
47kΩ	*47 × 10³*	*473 .....*	*RD¼PS 4 7 3 J*
0.5Ω	*0R5 .....*		*RN2H 0 R 5 K*
1Ω	*010 .....*		*RS1P 0 1 0 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621 ....*	*RN¼SR 5 6 2 1 F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Remote control unit Assembly (ADX1007)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC1	PD5039-A
★★	Q1	2SC2021
★	D1, D2 LED	SE303A
★★	Q2	2SC2673

SWITCH

Mark	Symbol & Description	Part No.
★★	SW1 Slide switch (POWER)	SSSS21507A

CAPACITORS

Mark	Symbol & Description	Part No.
	C1	CEJA470M6
	C3, C4	CCDSL101J50
	C5	CKDYB472K59

RESISTORS

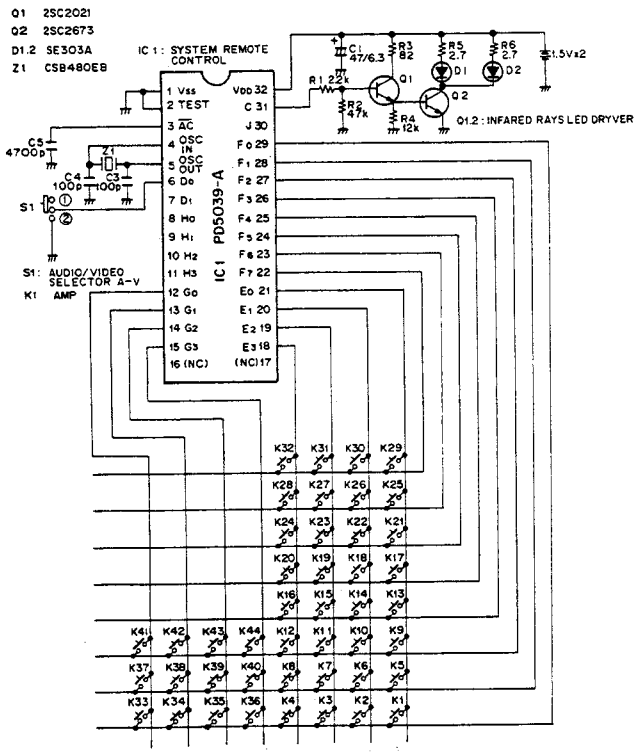
NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R5, R6	RD1/8PM2R7J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
★	X1 Ceramic resonator	CSB480FB

17.3 SCHEMATIC DIAGRAM



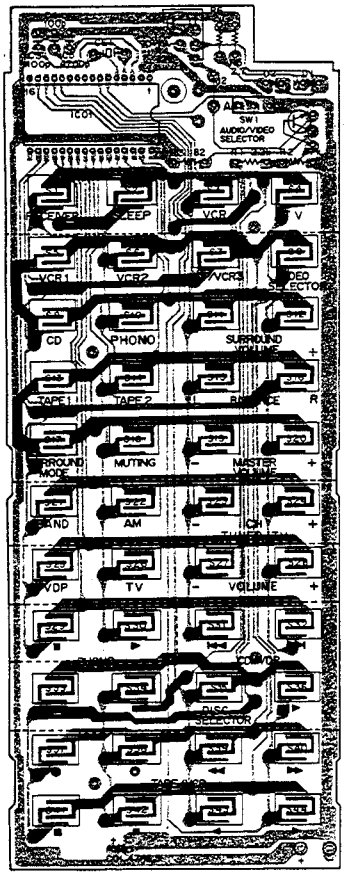
NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.

1. RESISTORS:
   Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k: kΩ, M: MΩ, (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% tolerance
2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p: pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
   ▭: DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
   ⇦ mA: DC current at no input signal
   mV: Signal voltage at FM 400 Hz ± 75 kHz DEV.
4. OTHERS:
   ➡ : Signal route.
   ⊘ : Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts unmbers.
   The underlined indicates the switch position.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

THE UNDERLINED INDICATES THE SWITCH POSITION

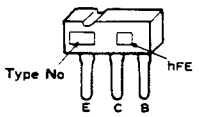
17.4 P.C. BOARD PATTERN



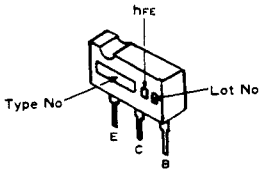
Key No.	SW No.
K1	S1
K2	S2
K3	S3
K4	S4
K5	S5
K6	S6
K7	S7
K8	S8
K9	S9
K10	S10
K11	S11
K12	S12
K13	S13
K14	S14
K15	S15
K16	S16
K17	S17
K18	S18
K19	S19
K20	S20
K21	S21
K22	S22
K23	S23
K24	S24
K25	S25
K26	S26
K27	S27
K28	S28
K29	S29
K30	S30
K31	S31
K32	S32
K33	S33
K34	S34
K35	S35
K36	S36
K37	S37
K38	S38
K39	S39
K40	S40
K41	S41
K42	S42
K43	S43
K44	S44

External Appearance of Transistors and ICs

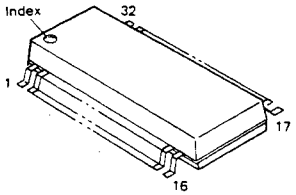
2SC2021



2SC2673



PD5039

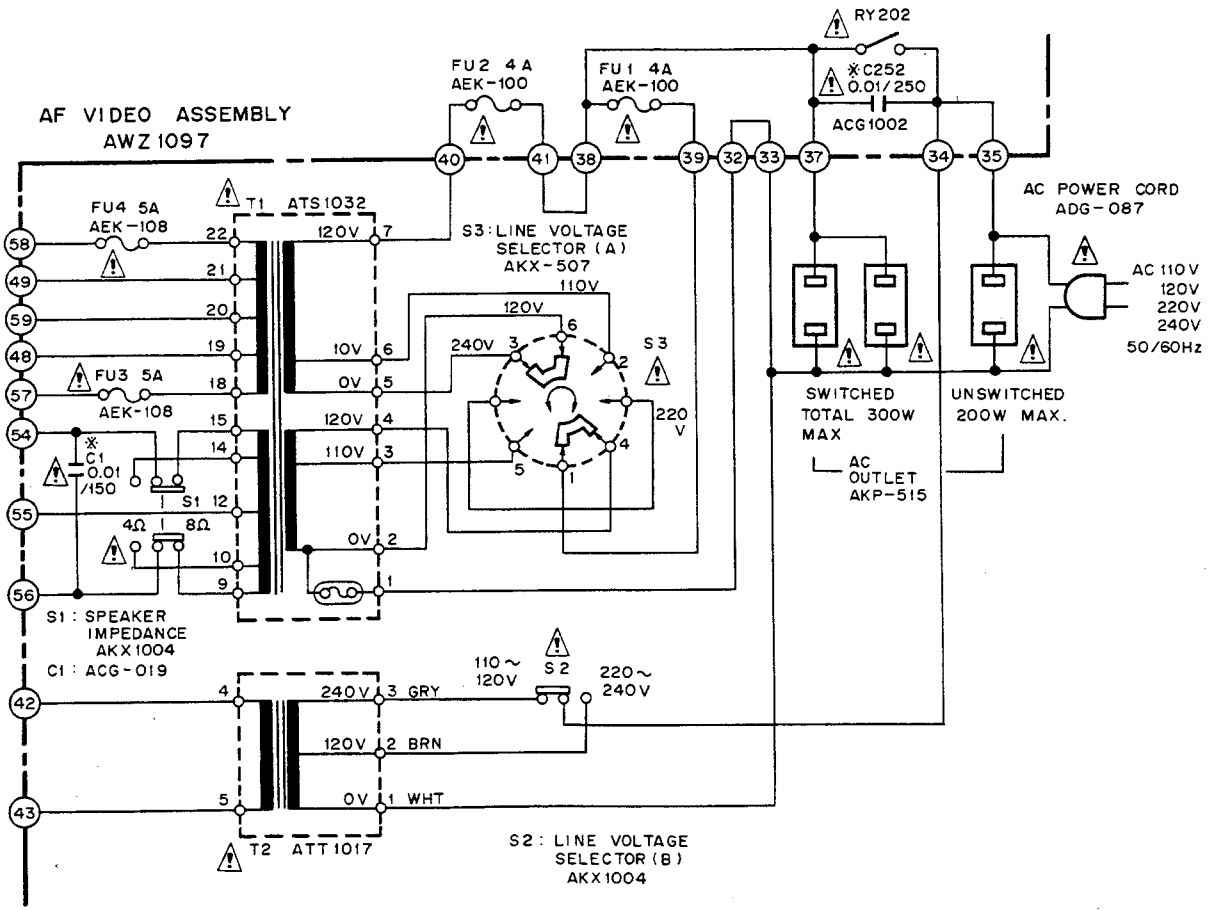


18. FOR S/G TYPE

CONTRAST OF MISCELLANEOUS PARTS

The VSX-5000(BK)/S/G type is the same as the VSX-5000(BK)/KUC type except for following sections.

Mark	Symbol & Description	Parts No.		Remarks
		VSX-5000(BK) KUC type	VSX-5000(BK) S/G type	
⚠ ★★	S2 Line voltage selector (A)	.....	AKX1004	
⚠ ★★	S3 Line voltage selector (B)	.....	AKX-507	
⚠ ★★	FU1 Fuse (8A)	AEK-304	.....	
⚠ ★★	FU1, FU2 Fuse (4A)	.....	AEK-100	
⚠	AC Power cord			
	(AC120V)	ADG-089	.....	
	(AC110V/120V/220V/240V)	.....	ADG-087	
⚠ ★	T1 Power transformer			
	(AC120V)	ATS1031	.....	
	(AC110V/120V/220V/240V)	.....	ATS1032	
⚠ ★	T2 Power transformer			
	AC120V)	ATT1016	.....	
	(AC110V/120V/220V/240V)	.....	ATT1017	
	Packing case	AHD1103	AHD1104	



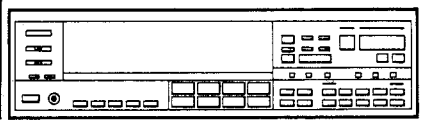
PIONEER

331a

PIONEER®

Service Manual

CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS



ORDER NO.
ARP1243-A

AUDIO/VIDEO STEREO RECEIVER

VSX-4000(BK)

MODEL VSX-4000(BK) COMES IN TWO VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Power requirement	Export destination
KUC	AC120V only	U.S.A and Canada
S/G	AC110V, 120V, 220V, 240V (Switchable)	U.S.Military

- **This service manual is applicable to the KUC and S/G types.**
- **As to the S/G type, please refer to pages 32.**
- **As to the circuit descriptions, please refer to the VSX-5000(BK) service manual (ARP1241).**

CONTENTS

1. SAFETY INFORMATION 2
2. EXPLODED VIEW AND PARTS LIST 3
3. PACKING 6
4. P.C. BOARDS CONNECTION DIAGRAM 7
5. SCHEMATIC DIAGRAM 15
6. ELECTRICAL PARTS LIST 23
7. ADJUSTMENTS 27
8. REMOTE CONTROL UNIT 29
9. FOR S/G TYPE 32

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A. / TEL: (213) 420-5700
PIONEER ELECTRONIC (EUROPE) N.V. Keetberglaan 1,2740 Beveren. Belgium TEL: 03/775-28-08
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia
TEL: (03) 580-9911

331

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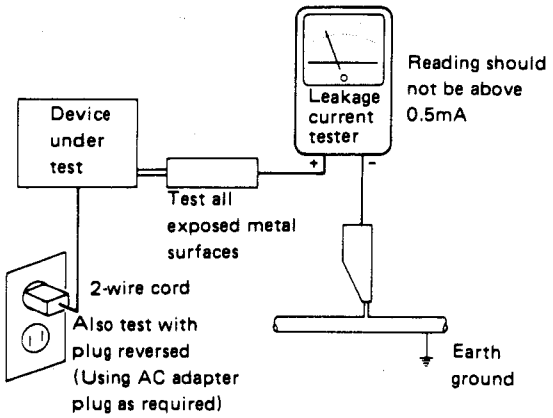
1. SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

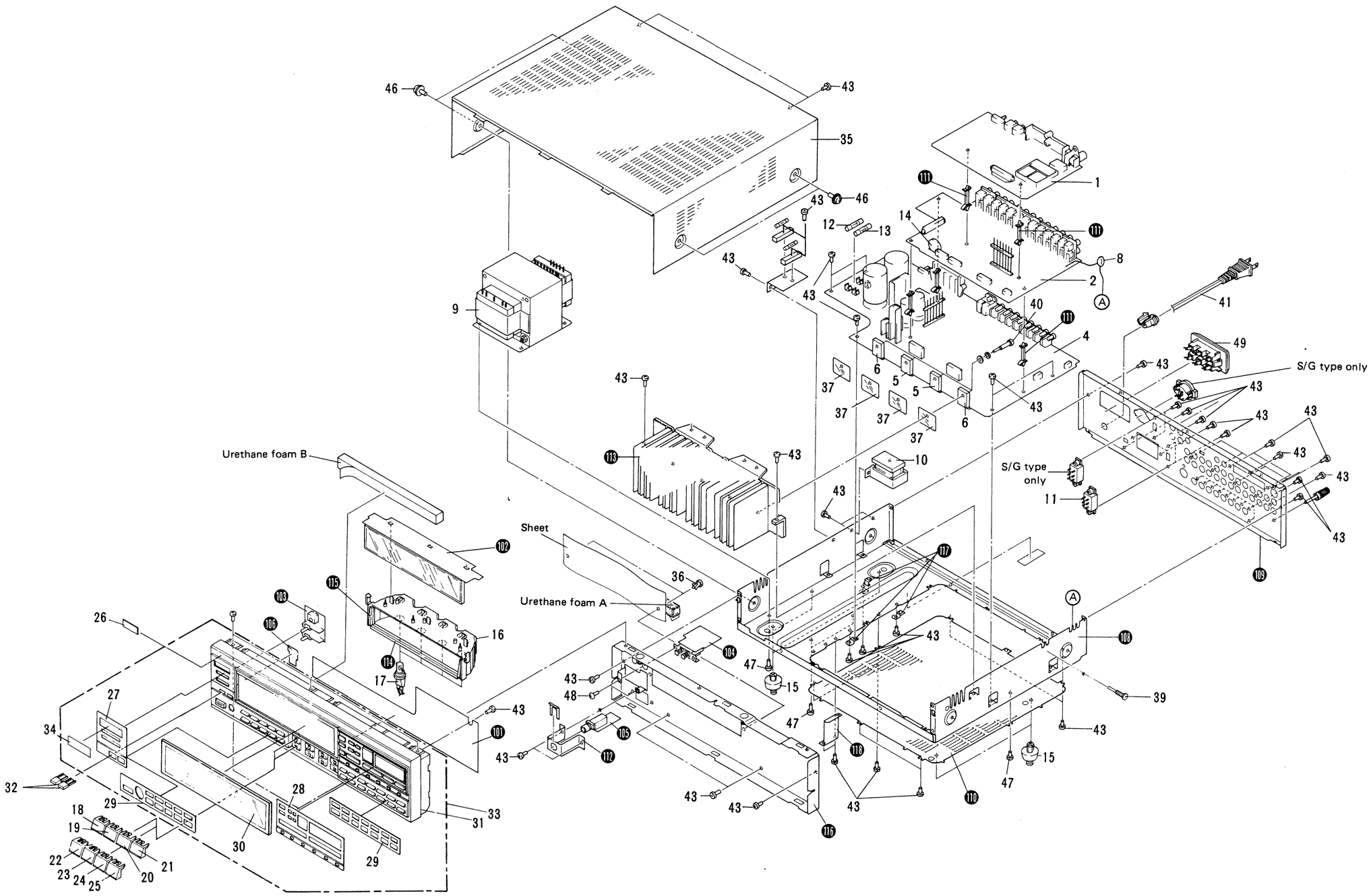
Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

2. EXPLODED VIEW AND PARTS LIST



Parts
Mark

⚠ ★★
⚠ ★★
⚠ ★★
⚠ ★★
⚠ ★★
⚠ ★★
⚠ ★★

4. P.C. BOARD CONNECTION DIAGRAM

External Appearance of Transistor and ICs

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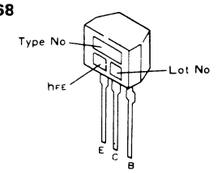
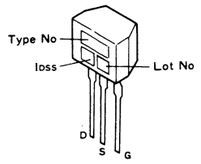
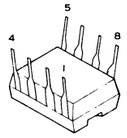
2SC1740S
2SC2668



2SK161
2SK241-Y



M5201P



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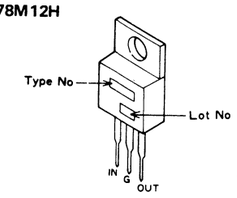
μPC78M12H



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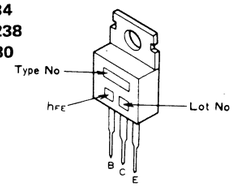
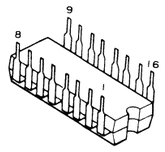
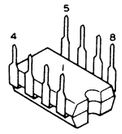


LM7001



M5218P
M5218PF
M5220P
M51848P
MN3007



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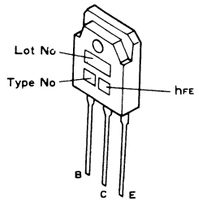
2SC3854(C)



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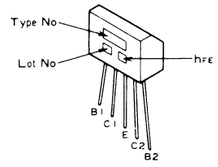

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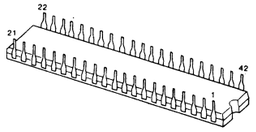
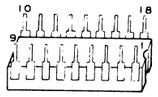


PD0012A



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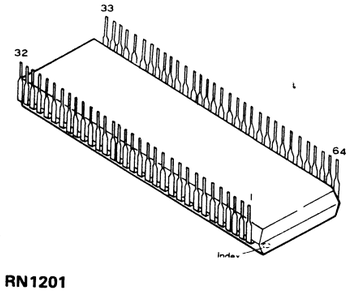

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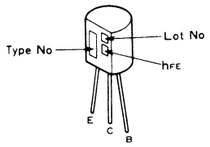

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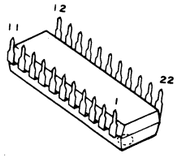

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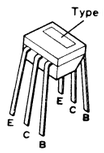

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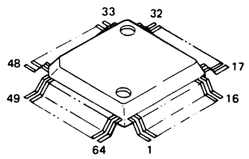

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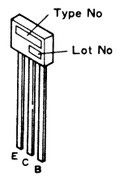
RN1203
RN2203
RN2201



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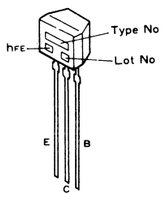

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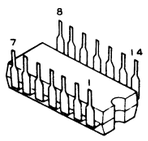
TC4069UBP
μPD4066BC



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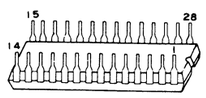
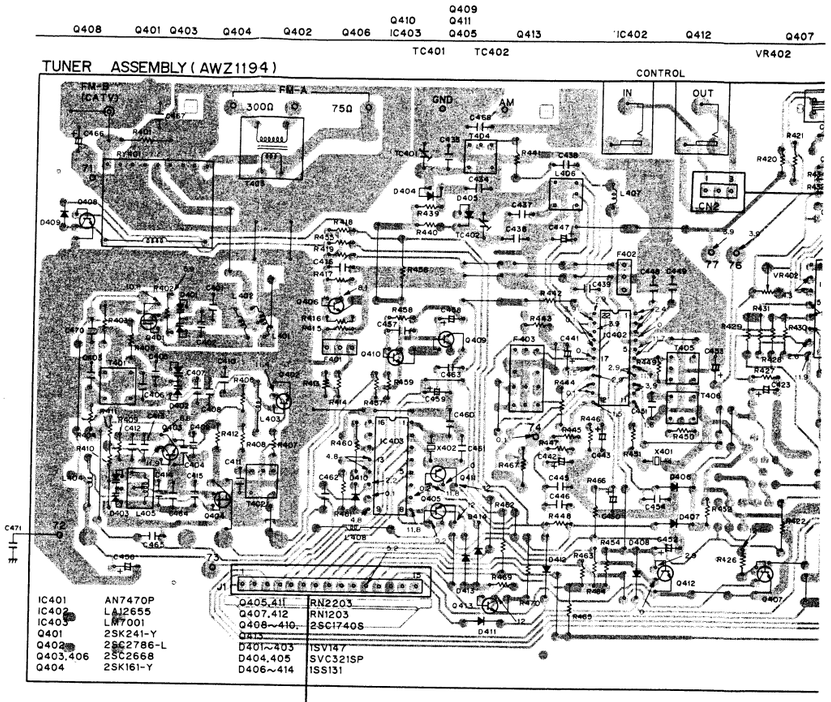
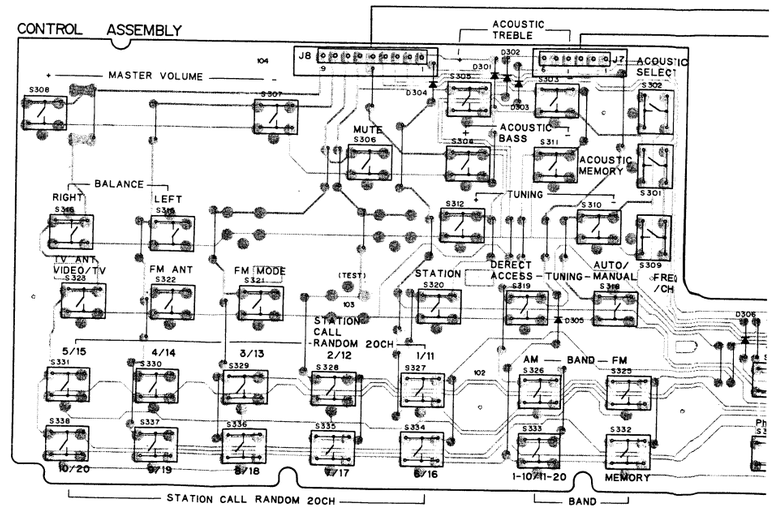






NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

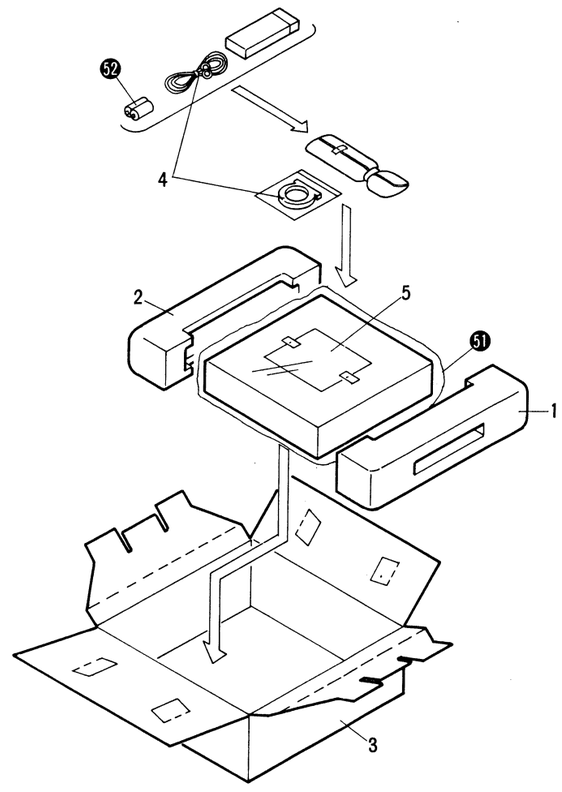
Parts List

Mark	No.	Part No.	Description
	1	AWZ1194	Tuner assembly
	2	AWZ1104	Signal assembly
	3	.....	.....
	4	AWZ1105	AF Video assembly
⚠ ★★	5	2SA1490(C)	Transistor (Q1, Q3)
⚠ ★★	6	2SC3854(C)	Transistor (Q2, Q4)
	7	.....	.....
	8	CKDYF473Z50	Ceramic capacitor (C2)
⚠ ★★	9	ATS1033	Power transformer (AC120V, T1)
⚠ ★★	10	ATT1016	Power transformer (AC120V, T2)
⚠ ★★	11	AKX1004	Line voltage selector (S1)
⚠ ★★	12	AEK-108	Fuse (AC125V, 5A, FU1)
⚠ ★★	13	AEK-100	Fuse (AC125V, 4A, FU3, FU4)
⚠ ★★	14	AEK-008	Battery
	15	AEC-784	Leg assembly
	16	AMR1049	Lamp assembly
	17	AEL1020	Lamp with lead wire
	18	AAD1046	Knob A (VCR1)
	19	AAD1047	Knob B (VCR2)
	20	AAD1048	Knob C (VDP/VCR3)
	21	AAD1049	Knob D (VIDEO SIGNAL SELECTOR)
	22	AAD1050	Knob E (TAPE1)
	23	AAD1051	Knob F (TAPE2)
	24	AAD1052	Knob G (CD)
	25	AAD1053	Knob H (PHONO)
	26	AAH1005	Alminum panel LU
	27	AAH1009	Alminum panel LD
	28	AAH1010	Alminum panel RU
	29	AAH1008	Alminum panel RD
	30	AAK1117	Acrylic panel
	31	AAM-030	Function board
	32	AAY-157	Push knob (SPEAKERS)
	33	AMB1084	Front panel
	34	AMR1105	IR Filter
	35	ANE1043	Bonnet case
	36	AEC-898	Rivet
	37	AEP-818	Mica sheet
	38	.....	.....
	39	ABA-176	Screw
	40	ABA-258	Screw
⚠	41	ADG-089	AC power cord
	42	.....	.....
	43	BBZ30P080FZK	Screw
	44	.....	.....
	45	.....	.....
	46	FBT40P080FZK	Screw
	47	VBZ40P080FMC	Screw
	48	VMZ30P060FMC	Screw
	49	AKP-515	AC socket (AC OUTLET)
	101		Control assembly
	102		LCD assembly
	103		Remote control assembly
	104		SP. Switch assembly
	105		Head phone terminal assembly
	106		Power switch assembly
	107		.....
	108		Chassis
	109		Rear panel
	110		Bottom plate
	111		P.C.B holder
	112		Head phone holder
	113		Heat sink
	114		Rubber (A)
	115		Rubber (B)

3. PACKING

Parts List

Mark	No.	Part No.	Description
	1	AHA1020	Front pad
	2	AHA1021	Rear pad
	3	AHD1105	Packing case
	4	AEA1002	Antenna set
	5	ARB1030	Operating instruction (ENGLISH)
	51		Packing sheet
	52		Battery assembly



SIGNAL ASSEMBLY (AWZ1104)

IC501,508	μPD4066BC
IC502	CX-789
IC503~505,507	M5218PF
IC506	M5201P
IC509	M5218P
IC510	TC9163N
IC511	TC4069UBP
IC512	PD3068
Q501,502	2SC1740S
Q503~505	RN1201
Q506,507	RN2201
Q508,509	RN1203
Q510	2SA933S
D502~504	RD13ES83
D505~507	RD5.1ESB
D509~516,519~534	1SS131
D518	1S1555

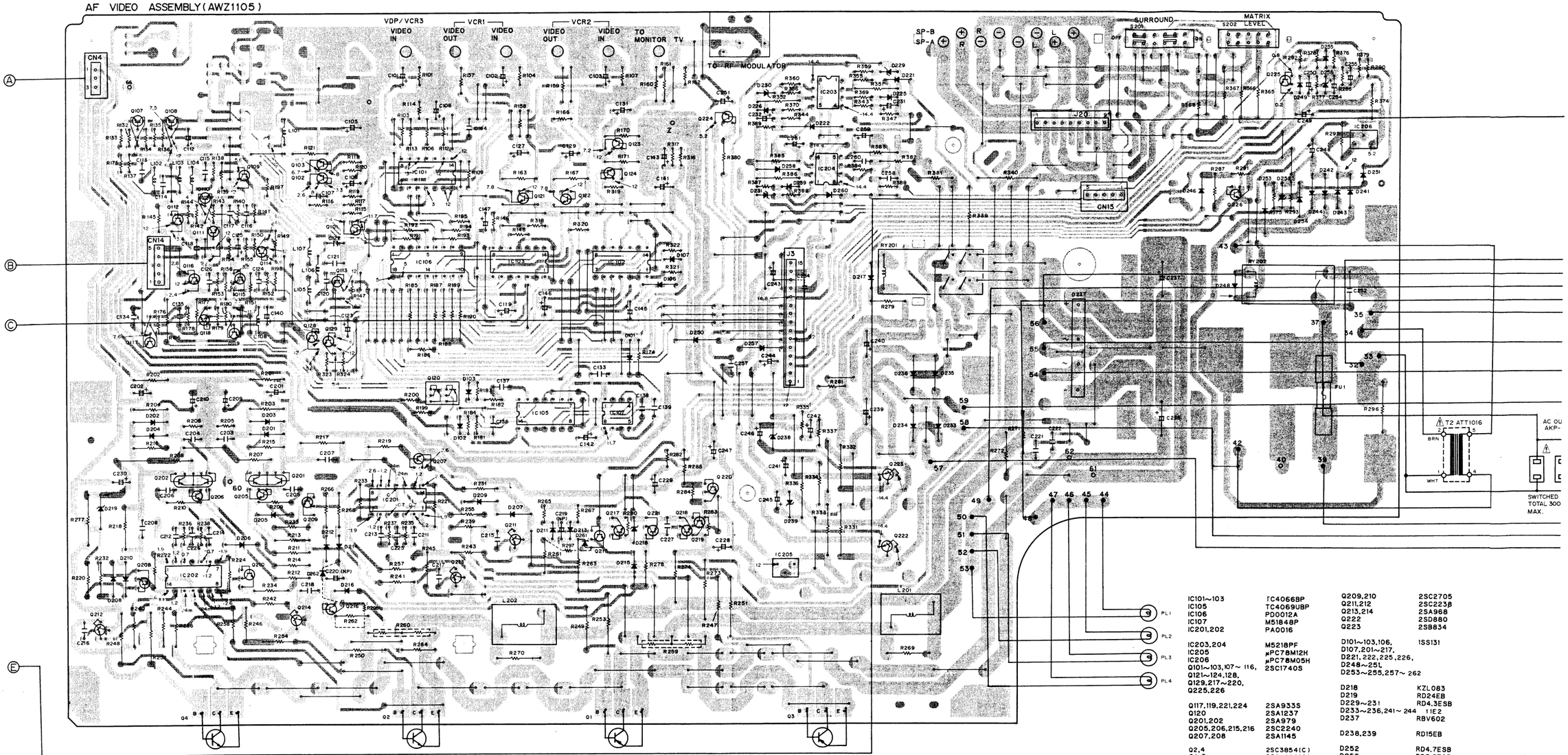
D301~307 1SS131

POWER SWITCH ASSEMBLY

REMOTE CONTROL ASSEMBLY

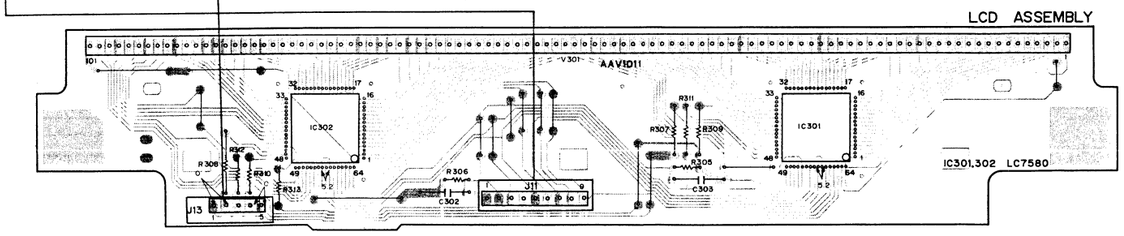
13 14 15 16 17 18

AF VIDEO ASSEMBLY (AWZ1105)

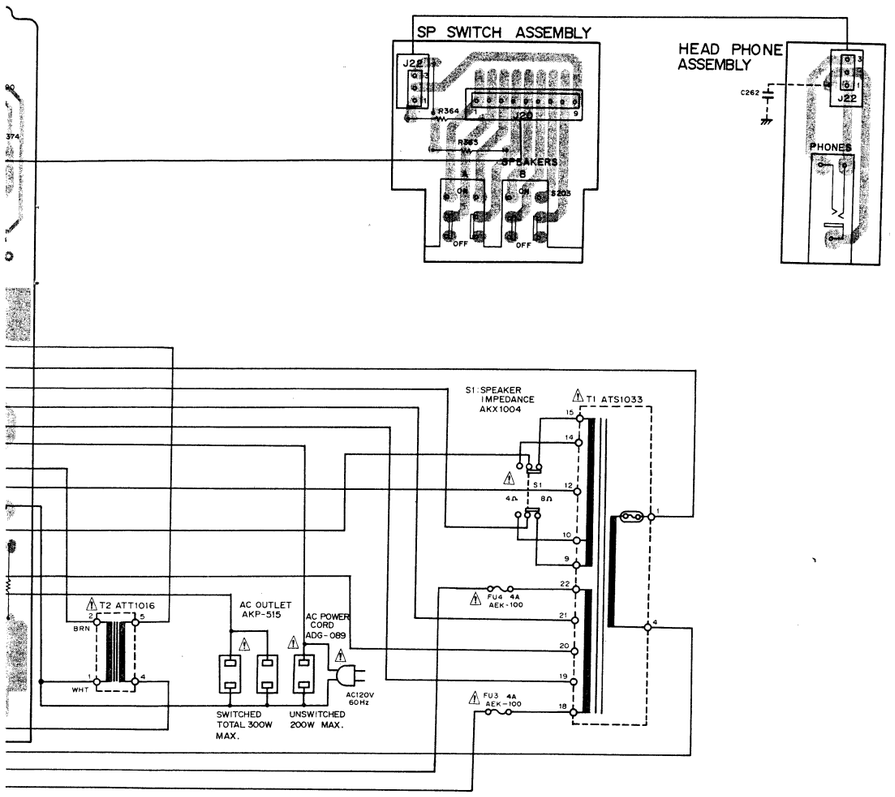


IC101~103	TC4066BP	Q209,210	2SC2705
IC105	TC4069UBP	Q211,212	2SC2238
IC106	PD0012A	Q213,214	2SA968
IC107	M51848P	Q222	2SD880
IC201,202	PA0016	Q223	2SB834
IC203,204	M5218PF	D101~103,106,	1SS131
IC205	μPC78M12H	D107,201~217,	
IC206	μPC78M05H	D221,222,225,226,	
Q101~103,107~116,	2SC1740S	D248~251,	
Q121~124,128,		D253~255,257~262	
Q129,217~220,			
Q225,226		D218	KZL083
		D219	RD24EB
Q117,119,221,224	2SA933S	D229~231	RD4.3ESB
Q120	2SA1237	D233~236,241~244	11E2
Q201,202	2SA979	D237	RBV602
Q205,206,215,216	2SC2240		
Q207,208	2SA1145	D238,239	RD15EB
Q2,4	2SC3854(C)	D252	RD4.7ESB
Q1,3	2SA1490(C)	D256	RD5.6ESB

LCD ASSEMBLY



13 14 15 16 17 18



2SC2705
2SC2238
2SA968
2SD880
2SB834

06, 1SS131
217,
125,226,

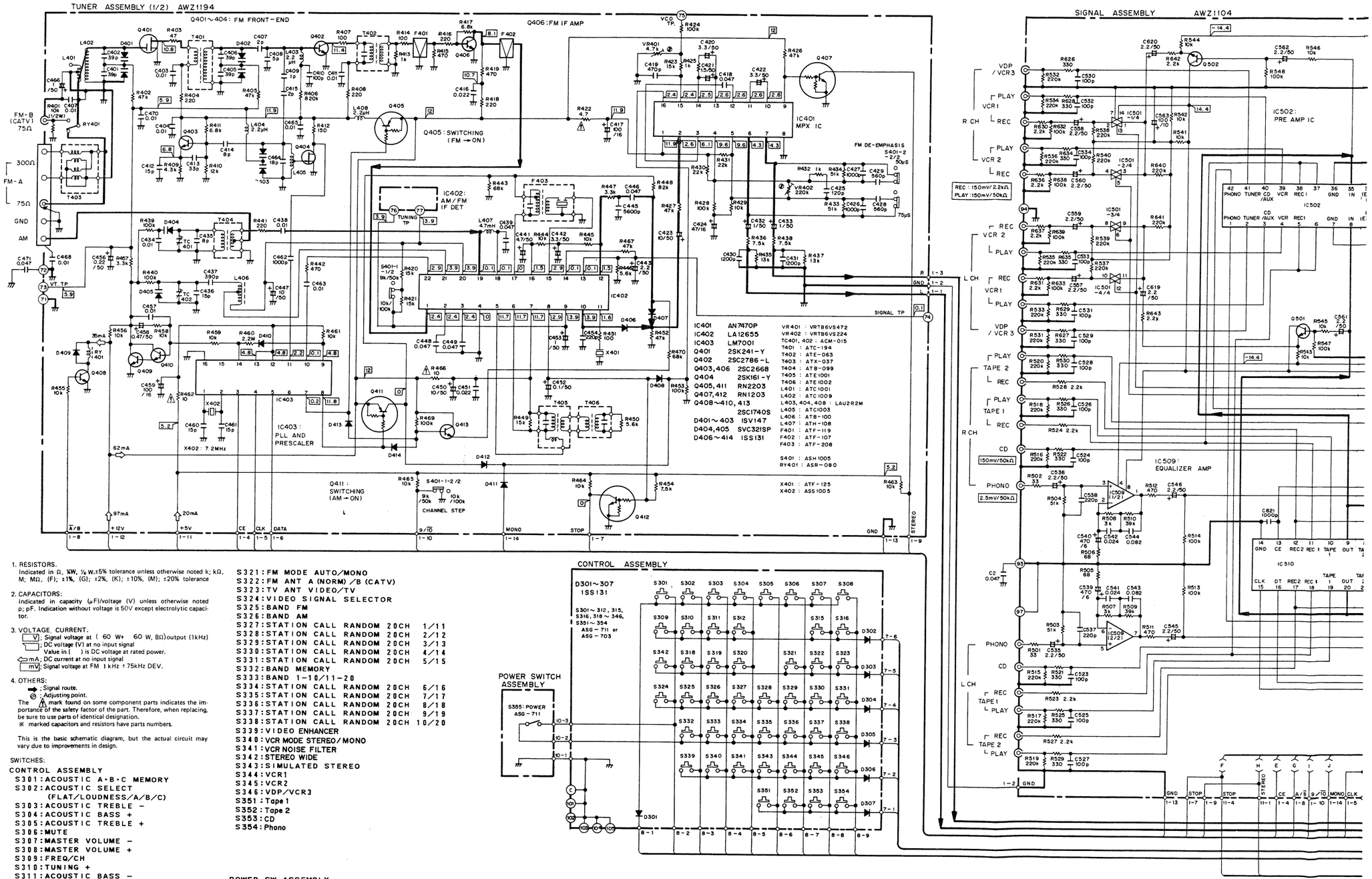
,257~ 262

KZL083
RD24EB
RD4.3ESB
,241~244 1IE2
RBV602

RD15EB

RD4.7ESB
RD5.6ESB

5. SCHEMATIC DIAGRAM



1. RESISTORS.
Indicated in Ω, ¼W, ⅛ W,±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT.
V; Signal voltage at (60 W+ 60 W, 8Ω)output (1kHz)
; DC voltage (V) at no input signal
Value in ( ) is DC voltage at rated power.
mA; DC current at no input signal
mV; Signal voltage at FM 1 kHz ± 75kHz DEV.

4. OTHERS:
; Signal route.
; Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

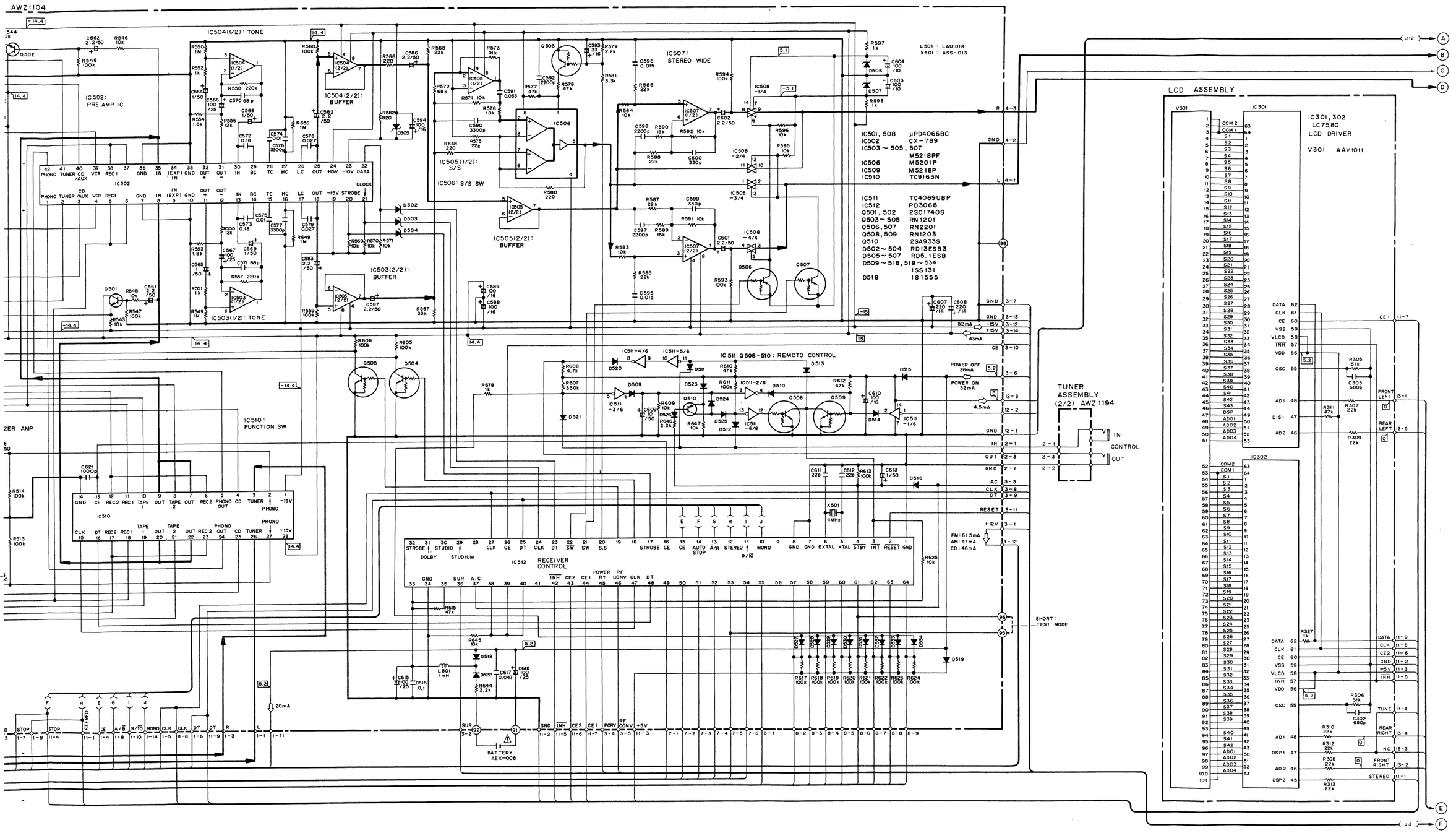
SWITCHES:

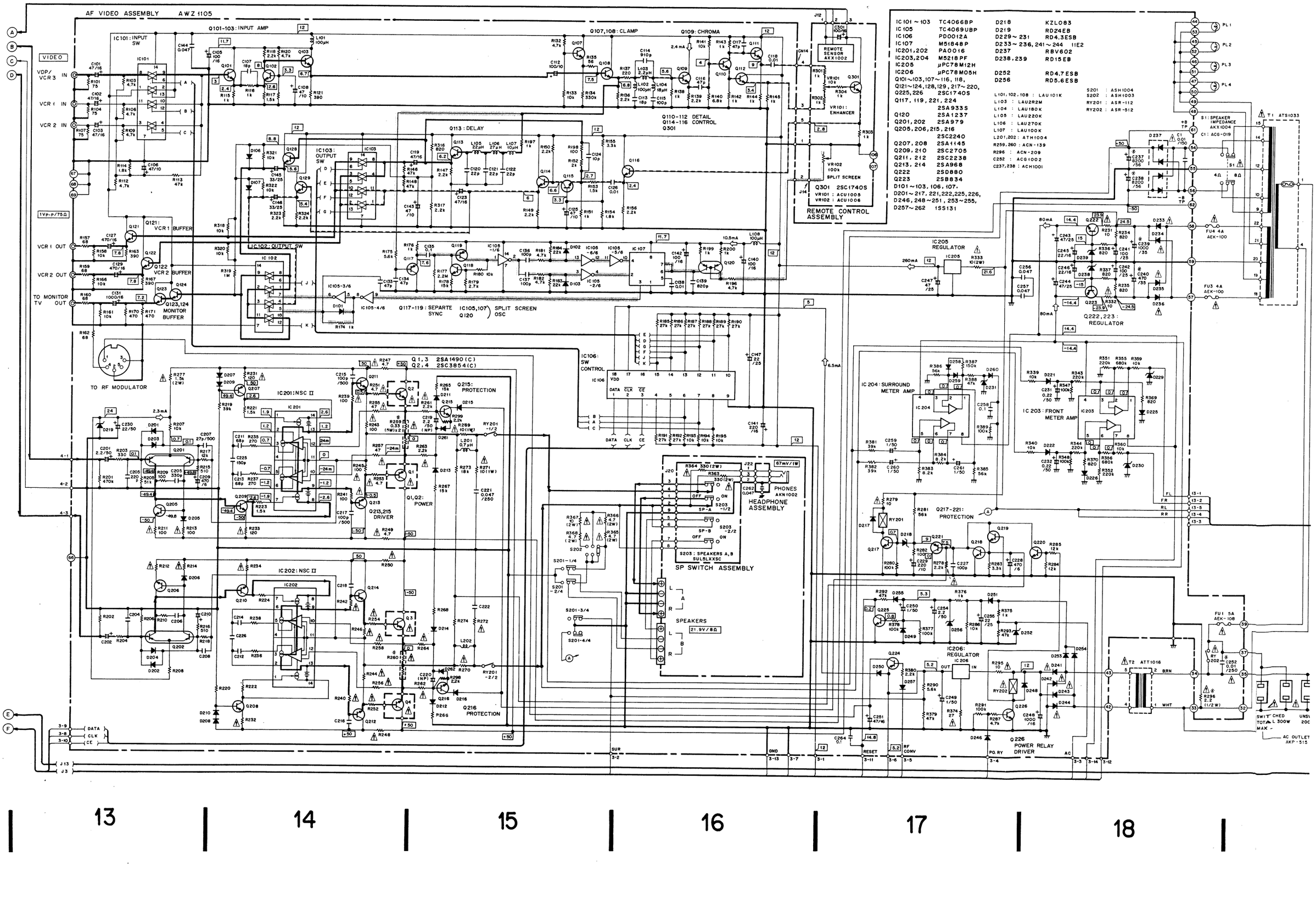
CONTROL ASSEMBLY
S301: ACOUSTIC A+B+C MEMORY
S302: ACOUSTIC SELECT (FLAT/LOUDNESS/A/B/C)
S303: ACOUSTIC TREBLE −
S304: ACOUSTIC BASS +
S305: ACOUSTIC TREBLE +
S306: MUTE
S307: MASTER VOLUME −
S308: MASTER VOLUME +
S309: FREQ/CH
S310: TUNING +
S311: ACOUSTIC BASS −
S312: TUNING +
S315: BALANCE LEFT
S316: BALANCE RIGHT
S318: TUNING AUTO/MANUAL
S319: TUNING DIRECT ACCESS
S320 STATION FREQ/NAME
S321: FM MODE AUTO/MONO
S322: FM ANT A (NORM)/B (CATV)
S323: TV ANT VIDEO/TV
S324: VIDEO SIGNAL SELECTOR
S325: BAND FM
S326: BAND AM
S327: STATION CALL RANDOM 20CH 1/11
S328: STATION CALL RANDOM 20CH 2/12
S329: STATION CALL RANDOM 20CH 3/13
S330: STATION CALL RANDOM 20CH 4/14
S331: STATION CALL RANDOM 20CH 5/15
S332: BAND MEMORY
S333: BAND 1-10/11-20
S334: STATION CALL RANDOM 20CH 6/16
S335: STATION CALL RANDOM 20CH 7/17
S336: STATION CALL RANDOM 20CH 8/18
S337: STATION CALL RANDOM 20CH 9/19
S338: STATION CALL RANDOM 20CH 10/20
S339: VIDEO ENHANCER
S340: VCR MODE STEREO/MONO
S341: VCR NOISE FILTER
S342: STEREO WIDE
S343: SIMULATED STEREO
S344: VCR1
S345: VCR2
S346: VDP/VCR3
S351: Tape 1
S352: Tape 2
S353: CD
S354: Phono

POWER SW ASSEMBLY
S355: POWER STAND-BY/ON

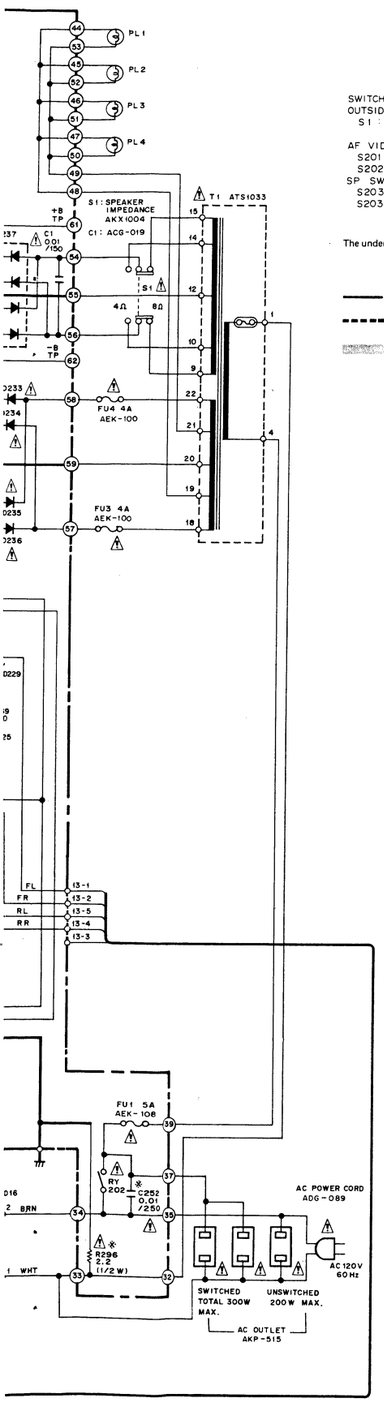
TUNER ASSEMBLY
S401 (−1): CHANNEL STEP AM 9K − 10K
FM 50K − 100K
S401 (−2): FM DE-EMPHASIS 50μs − 75μs

The underlined indicates the switch position.


AWZ1104
IC504(1/2): TONE
IC504(2/2): BUFFER
IC502: PRE AMP IC
IC505(1/2): S/S
IC506: S/S SW
IC505(2/2): BUFFER
IC503(2/2): BUFFER
IC503(1/2): TONE
IC507: STEREO WIDE
IC508 -1/4
IC508 -2/4
IC508 -3/4
IC508 -4/4
L501 : LAU101K
X501 : ASS-013
IC501, 508 μPD4066BC
IC502 CX-789
IC503 ~ 505, 507 M5218PF
IC506 M5201P
IC509 M5218P
IC510 TC9163N
IC511 TC4069UBP
IC512 PD3068
Q501, 502 2SC1740S
Q503 ~ 505 RN1201
Q506, 507 RN2201
Q508, 509 RN1203
Q510 2SA933S
D502 ~ 504 RD13ESB3
D505 ~ 507 RD5.1ESB
D509 ~ 516, 519 ~ 534 1SS131
D518 1S1555
IC511-4/6
IC511-5/6
IC 511 Q508-510 : REMOTO CONTROL
IC511-2/6
IC511-3/6
IC511-6/6
IC511-1/6
IC510: FUNCTION SW
IC512 RECEIVER CONTROL
POWER OFF 26mA
POWER ON 32mA
4.5mA
52mA
43mA
FM: 61.5mA
AM: 47mA
CD: 46mA
20mA
SHORT: TEST MODE
BATTERY AEX-008
TUNER ASSEMBLY (2/2) AWZ 1194
IN CONTROL
OUT
LCD ASSEMBLY
V301
IC301
IC301, 302 LC7580 LCD DRIVER
V301 AAV1011
IC302
J12
J3


AF VIDEO ASSEMBLY AWZ1105
IC101 : INPUT SW
Q101-103 : INPUT AMP
Q107,108 : CLAMP
Q109 : CHROMA
Q110-112 DETAIL
Q114-116 CONTROL
Q301
Q113 : DELAY
IC103 : OUTPUT SW
IC102 : OUTPUT SW
Q117-119 : SEPARTE SYNC
IC105,107 Q120 SPLIT SCREEN OSC
REMOTE SENSOR AKX1002
VR101 : ENHANCER
VR102 100k SPLIT SCREEN
Q301 2SC1740S
VR101 : ACU1005
VR102 : ACU1006
REMOTE CONTROL ASSEMBLY
IC101 ~ 103 TC4066BP
IC105 TC4069UBP
IC106 PD0012A
IC107 M51848P
IC201,202 PA0016
IC203,204 M5218PF
IC205 μPC78M12H
IC206 μPC78M05H
Q101~103,107~116, 118,
Q121~124,128,129, 217~220,
Q225,226 2SC1740S
Q117, 119, 221, 224 2SA933S
Q120 2SA1237
Q201, 202 2SA979
Q205,206,215,216 2SC2240
Q207, 208 2SA1145
Q209, 210 2SC2705
Q211, 212 2SC2238
Q213, 214 2SA968
Q222 2SD880
Q223 2SB834
D101~103, 106, 107.
D201~217, 221, 222, 225, 226,
D246, 248~251, 253~255,
D257~262 1SS131
D218 KZL083
D219 RD24EB
D229~231 RD4.3ESB
D233~236, 241~244 11E2
D237 RBV602
D238, 239 RD15EB
D252 RD4.7ESB
D256 RD5.6ESB
L101, 102, 108 : LAU101K
L103 : LAU2R2M
L104 : LAU180K
L105 : LAU220K
L106 : LAU270K
L107 : LAU100K
L201, 202 : ATH1004
R259, 260 : ACN-139
R296 : ACN-209
C252 : ACG1002
C237, 238 : ACH1001
S201 : ASH1004
S202 : ASH1003
RY201 : ASR-112
RY202 : ASR-512
S1 : SPEAKER IMPEDANCE AKX1004
C1 : ACG-019
T1 ATS1033
FU4 4A AEK-100
FU3 4A AEK-100
IC205 REGULATOR
Q222,223 : REGULATOR
IC204 : SURROUND METER AMP
IC203 : FRONT METER AMP
Q217-221 : PROTECTION
IC206 : REGULATOR
Q226 POWER RELAY DRIVER
FU1 5A AEK-108
T2 ATT1016
SWITCHED TOTAL 300W MAX
AC OUTLET AKP-515
IC106 : SW CONTROL
Q1, 3 2SA1490(C)
Q2, 4 2SC3854(C)
Q215 : PROTECTION
IC201 : NSC II
IC202 : NSC II
Q1, Q2 : POWER
Q213, 215 DRIVER
Q216 PROTECTION
HEADPHONE ASSEMBLY
SP SWITCH ASSEMBLY
SPEAKERS 21.9V/8Ω
TO RF MODULATOR
VDP/ VCR 3 IN
VCR 1 IN
VCR 2 IN
VCR 1 OUT
VCR 2 OUT
TO MONITOR TV OUT
Q121 : VCR 1 BUFFER
Q122 VCR 2 BUFFER
Q123,124 MONITOR BUFFER
1Vp-p/75Ω
DATA
CLK
CE
SUR
GND
RESET
RF CONV
PO. RY
AC

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



SWITCHES
OUTSIDE OF P.C BOARD ASSEMBLY
S1 : SPEAKER IMPEDANCE SELECTOR A, B
4Ω – 8Ω
AF VIDEO ASSEMBLY
S201 : SURROUND ON – OFF
S202 : MATRIX LEVEL Hi – Mid – Lo
SP SW ASSEMBLY
S203 (1/2) : SPEAKERS A ON – OFF
S203 (2/2) : SPEAKERS B ON – OFF

The underlined indicates the switch position.

——— VIDEO SIGNAL (ORIGINAL SIGNAL)
- - - - - ENHANCER SIGNAL
▒▒▒▒ SPRIT SCREEN CONTROL SIGNAL

6. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	*56 × 10¹*	*561 . . . . . RD¼PS*	*5 6 1 J*
47kΩ	*47 × 10³*	*473 . . . . . RD¼PS*	*4 7 3 J*
0.5Ω	*0R5 . . . . . RN2H*		*0 R 5 K*
1Ω	*010 . . . . . RS1P*		*0 1 0 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621 . . . . RN¼SR*	*5 6 2 1 F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Miscellaneous Parts
P.C.BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	Tuner assembly	AWZ1194
	Signal assembly	AWZ1104
	AF Video assembly	AWZ1105
	Control assembly	Non supply
	LCD assembly	Non supply
	Remote control assembly	Non supply
	SP Switch assembly	Non supply
	Headphone assembly	Non supply
	Power switch assembly	Non supply
	Remote control unit assembly	ADX1007

OTHERS

Mark	Symbol & Description	Part No.
⚠ ★★	Q2, Q4 Transistor	2SC3854(C)
⚠ ★★	Q1, Q3 Transistor	2SA1490(C)
	C2 Ceramic capacitor	CKDYF473Z50
⚠ ★	T1 Power transformer (AC120V)	ATS1033
⚠ ★	T2 Power transformer (AC120V)	ATT1016
⚠ ★★	S1 Speaker inpedance selector	AKX1004
⚠ ★★	FU1 Fuse (AC125V, 5A)	AEK-108
⚠ ★★	FU3, FU4 Fuse (AC125V, 4A)	AEK-100
⚠	Battery	AEX-008
⚠	AC Socket (AC OUTLET)	AKP-515 (AKP-504)
⚠	AC power cord	ADG-089

Tuner Assembly (AWZ1194)
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC401 MPX IC	AN7470P
★★	IC402 AM/FM IC	LA1265S
★★	IC403 PLL IC	LM7001
★★	Q407, Q412	RN1203
★★	Q405, Q411	RN2203
★★	Q408—Q410, Q413	2SC1740S
★★	Q403, Q406	2SC2668
★★	Q402	2SC2786
★★	Q404	2SK161
★★	Q401	2SK241
★	D404, D405	SVC321SP
★	D406—D414	1SS131
★	D401—D403	1SV147

SWITCH AND RELAY

Mark	Symbol & Description	Part No.
★★	S401 Slide switch (SPLIT SCREEN,ENHNCER)	ASH1005
★★	RY401 Relay	ASR-080

COILES,TRANSFORMERS AND FILTERS

Mark	Symbol & Description	Part No.
	L406 AM OSC coil	ATB-100
	L401 FM coil	ATC1001
	L405 FM coil	ATC1003
	L402 FM coil	ATC1009
⚠ ★	T404 AM ANT transformer	ATB-099
⚠ ★	T401 FM RF transformer	ATC-194
⚠ ★	T402 FM Matching transformer	ATE-063
⚠ ★	T405 FM Detector transformer	ATE1001
⚠ ★	T406 FM Detector transformer	ATE1002
⚠ ★	T403 Balun	ATX-037
	L407 Inductor	ATH-108
	L403, L404, L408 Inductor	LAU2R2M
	F402 FM Ceramic filter	ATF-107
	F401 FM Ceramic filter	ATF-119
	F403 AM Ceramic filter	ATF-208

CAPACITORS

Mark	Symbol & Description	Part No.
	TC401, TC402 Ceramic trimmer	ACM-015
	C409	CCDCH010C50
	C415	CCDCH020C50
	C414	CCDCH080D50
	C412, C460, C461	CCDCH150J50
	C413	CCDCH330J50
	C401, C402, C405, C406	CCDRH390J50
	C407	CCDSL020C50
	C408	CCDSL050C50
	C410	CCDSL101J50
	C454	CCDSL221J50
	C425	CCDSL121J50
	C435	CCDTH080D50
	C436	CCDTH150J50
	C464	CCDTH180J50
	C456	CEASR22M50
	C458	CEASR47M50
	C452	CEAS0R1M50
	C432, C433, C453, C466	CEAS010M50
	C421	CEAS1R5M50
	C423, C447, C450	CEAS100M50
	C417, C459	CEAS101M16
	C443	CEAS2R2M50
	C420, C422, C442	CEAS3R3M50
	C441	CEAS4R7M50
	C424	CEAS470M16
	C462	CKCYB102K50
	C430, C431	CKCYB122K50
	C445	CKCYB562K50
	C416, C451	CKCYF223Z50
	C418, C439, C446, C448, C449	CKCYX473M25
	C403, C404, C411, C434, C438, C457, C463, C465, C467, C468, C470	CKDYF103Z50
	C426, C427	CQMA102J50
	C471	CKCYF103Z50
	C428, C429	CQMA561K50
	C437	CQSA391J50
	C419	CQSA471J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R401	RD1/2PM103J
⚠	R462, R466	RD1/4PMF100J
⚠	R422	RD1/4PMF4R7J
	R460	RD1/4PM225J
★	VR402 (220k)	VRTB6VS224
★	VR401 (4.7k)	VRTB6VS472
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
★	X402 Crystal resonator	ASS1005
★	X401 Ceramic resonator	ATF-125
	Terminal (ANT)	AKA1003
	Mini jack	AKN-207

Signal Assembly (AWZ1104)
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC502	CX-789
★★	IC506	M5201P
★★	IC509	M5218P
★★	IC503—IC505, IC507	M5218PF
★★	IC512 RECEIVER CONTROL IC	PD3068
★★	IC511	TC4069UBP
★★	IC510	TC9163N
★★	IC501, IC508	μPD4066BC
★★	Q503—Q505	RN1201
★★	Q508, Q509	RN1203
★★	Q506, Q507	RN2201
★★	Q510	2SA933S
★★	Q501, Q502	2SC1740S
★	D502—D504	RD13ESB3
★	D505—D507	RD5.1ESB
★	D509—D516, D519—D534	1SS131
★	D518	1S1555

COIL

Mark	Symbol & Description	Part No.
	L501 Inductor	LAU101K

CAPACITORS

Mark	Symbol & Description	Part No.
	C570, C571	CCCSL680J50
	C523—C534	CCCSL101J50
	C611, C612	CCCSL220J50
	C537, C538	CCCSL221J50
	C535, C536	CEANL2R2M50
	C564,C565,C568,C569,C613	CEAS010M50
	C609	CEAS100M50
	C563, C603, C604	CEAS101M10
	C588, C589, C594, C610	CEAS101M16
	C566, C567, C615, C618	CEAS101M25
	C545, C546, C557—C562, C582, C583, C586, C587, C601, C602, C619, C620	CEAS2R2M50
	C607, C608	CERAS221M16
	C593	CERAS330M16
	C539, C540	CERAS471M6
	C599, C600	CKCYB331K50
	C592	CKCYF222Z50
	C616	CKDYX104M25
	C617	CKCYF473Z50
	C574, C575	CQMA103J50
	C595, C596	CQMA153J50
	C572, C573	CQMA184J50
	C597, C598	CQMA222J50
	C591	CQMA333J50
	C541, C542	CQMA243J50
	C578, C579	CQMA273J50
	C576, C577, C590	CQMA332J50
	C543, C544	CQMA823J50
	C621	CKCYB102K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R582	RD1/4PM821J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol &
★	X501 Crys
	Terr
	Terr

AF Video Assem
SEMICONDUCTO

Mark	Symbol &
★★	IC107
★★	IC203, IC2
★★	IC201, IC2
★★	IC106
★★	IC101—IC
★★	IC105
★★	IC206
★★	IC205
★★	Q207, Q2
★★	Q120
★★	Q117, Q1
★★	Q213A, Q
★★	Q201B, Q
★★	Q223
★★	Q101—Q1
	Q121—Q1
	Q217—Q2
	Q118
★★	Q211A, Q
★★	Q205, Q2
★★	Q209, Q2
★★	Q222
★★	D218
⚠ ★	D237
★	D238, D2
★	D219
★	D229—D2
★	D252
★	D256
★	D101—D1
	D201—D2
	D225, D2
	D248—D2
	D257—D2
★	D233—D2

SWITCHES AND

Mark	Symbol &
★★	S201 (SUI
★★	S202 (MA
★	RY201
⚠ ★	RY202

COILS

Mark	Symbol &
	L201, L20
	L107 Indu
	L101, L10
	L104 Indu

OTHERS

Mark	Symbol & Description	Part No.
★	X501 Crystal resonator	ASS-013
	Terminal (4P)	AKB1007
	Terminal (6P)	AKB1008

AF Video Assembly (AWZ1105)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC107	M51848P
★★	IC203, IC204	M5218PF
★★	IC201, IC202	PA0016
★★	IC106	PD0012A
★★	IC101—IC103	TC4066BP
★★	IC105	TC4069UBP
★★	IC206	μPC78M05H
★★	IC205	μPC78M12H
★★	Q207, Q208	2SA1145
★★	Q120	2SA1237
★★	Q117, Q119, Q221, Q224	2SA933S
★★	Q213A, Q214A	2SA968
★★	Q201B, Q202B	2SA979
★★	Q223	2SB834
★★	Q101—Q103, Q107—Q116, Q121—Q124, Q128, Q129, Q217—Q220, Q225, Q226, Q118	2SC1740S
★★	Q211A, Q212A	2SC2238
★★	Q205, Q206, Q215, Q216	2SC2240
★★	Q209, Q210	2SC2705
★★	Q222	2SD880
★★	D218	KZL083
⚠ ★	D237	RBV602
★	D238, D239	RD15EB
★	D219	RD24EB
★	D229—D231	RD4.3ESB
★	D252	RD4.7ESB
★	D256	RD5.6ESB
★	D101—D103, D106, D107, D201—D217, D221, D222, D225, D226, D246, D248—D251, D253—D255, D257—D262	1SS131
★	D233—D236, D241—D244	11E2

SWITCHES AND RELAYS

Mark	Symbol & Description	Part No.
★★	S201 (SURROUND SW)	ASH1004
★★	S202 (MATRIX LEVEL)	ASH1003
★	RY201	ASR-112
⚠ ★	RY202	ASR-512

COILS

Mark	Symbol & Description	Part No.
	L201, L202 Choke coil (0.7mH)	ATH1004
	L107 Inductor (10μH)	LAU100K
	L101, L102, L108 Inductor (100μH)	LAU101K
	L104 Inductor (18μH)	LAU180K
	L103 Inductor (2.2μH)	LAU2R2M
	L105 Inductor (22μH)	LAU220K
	L106 Inductor (27μH)	LAU270K

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C252 (0.01μF/AC120V)	ACG1002
	C237, C238 (8200/56)	ACH1001
	C124	CCCCH100D50
	C115	CCCCH101J50
⚠	C1 Ceramic capacitor (0.01μF/AC150V)	ACG-019
	C113	CCCCH180J50
	C120—C122	CCCCH220J50
	C136, C137, C227	CCCSL101J50
	C215—C218	CCCSL101K500
	C225, C226	CCCSL151J50
	C107	CCCSL180J50
	C203, C204	CCCSL221J50
	C207, C208	CCCSL270K500
	C116, C117, C133, C134	CCCSL470J50
	C211—C214	CCCSL680J50
	C219, C220	CEANP2R2M100
	C231, C232	CEASR22M50
	C249, C250, C259—C261	CEAS010M50
	C112	CEAS101M10
	C105, C140, C142	CEAS101M16
	C241, C242	CEAS101M25
	C248, C131	CEAS102M16
	C239	CEAS102M35
	C201, C202, C254	CEAS2R2M50
	C245, C246	CEAS220M16
	C147	CEAS220M25
	C230	CEAS220M50
	C229	CEAS221M10
	C141	CEAS221M16
	C145, C146	CEAS330M25
	C255	CEAS4R7M50
	C106, C108, C125, C143	CEAS220M25
	C101—C103, C119, C123, C251	CEAS470M16
	C243, C244, C247	CEAS470M25
	C127, C129	CEAS471M16
	C240	CEAS471M35
	C209, C210, C228	CEAS471M6
	C205, C206	CKCYB331K50
	C118, C126, C138	CKCYX103M25
	C144, C257	CKDYF473Z50
	C258	CKDYX104M25
	C135	CQMA104J50
	C221, C222	CQMA473K250
	C139	CQSA821J50
	C114	CQSA911J50
	C264	CKCYX104M25

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
⚠	R259, R260 (0.33Ω 5Wx2)	ACN-139
⚠	R296 (2.2MΩ)	ACN-209
⚠	R279	RD1/4PMFL100J
⚠	R211—R214, R239—R246, R255—R258, R261—R264, R278, R295, R331, R332, R374	RD1/4PMF□□□J
	R121, R163, R167, R170, R171, R177, R201—R204, R207—R210, R215—R224, R251—R254	RD1/4PM□□□J
⚠	R231—R234	RFA1/4PS121J
⚠	R247—R250	RFA1/4PS4R7J
⚠	R269—R272	RS1LMF100J
⚠	R333, R367	RS2LMF100J
⚠	R277	RS2LMF152J
⚠	R365, R366, R368	RS2LMF4R7J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Pin jack (1P)	AKB1010
	Terminal (SPEAKERS) (8P)	AKE-111
	DIN socket (5P)	AKP-081

Control Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★	D301—D307	1SS131

SWITCHES

Mark	Symbol & Description	Part No.
★★	S301—S312, S315, S316, S318—S346, S351—S354 Tact switch (ACOUSTIC MEMORY, ACOUSTIC, TREBLE-, BASS, MUTE, VOLUME-, VOLUME, FREQICH, TUNE-, BASS-, TUNE:, BLANCE LEFT, BLANCE RIGHT, EXPANDER, AUTO/MANU, DIRECT, STATION NAME, FM MONO, CATV, TV/VIDEO, V.SEL, FM, AM, 1, 2, 3, 4, 5, MEMORY, 1-10/11-20, 6, 7, 8, 9, 10, V.ADP, ENHANCER, VCR MODE, NOISE FILTER, SIMULATED STEREO, VCR1, VCR2, VDP, STUDIO, STADIUM, DOLBY, TAPE1, TAPE2, CD, PHONO)	ASG-711 (ASG-703)

LCD Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC301, IC302	LC7580

CAPACITORS

Mark	Symbol & Description	Part No.
	C302, C303	CKPYB681K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
★	V301 Indicator	AAV1011

Remote Control Assembly

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★★	Q301	2SC1740S

CAPACITORS

Mark	Symbol & Description	Part No.
	C301	CEAS101M16

RESISTORS

Mark	Symbol & Description	Part No.
★	VR101 Semi-fixed (100k)	ACU1005
★	VR102 Semi-fixed (100k)	ACU1006
	R301—R304	RD1/8PM102J

CAPACITORS

Mark	Symbol & Description	Part No.
	C301	CEAS101M16

OTHERS

Mark	Symbol & Description	Part No.
	Remote control sensor unit	AXX1002

SP switch Assembly

SWITCH

Mark	Symbol & Description	Part No.
★★	S203 Push switch (SPEAKER)	SUL5LXXSC

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R363, R364	RS2LMF331J

Headphone Assembly

Mark	Symbol & Description	Part No.
	Jack (PHONE)	AKN1002

Power switch Assembly

Mark	Symbol & Description	Part No.
★★	S355 Tact switch (POWER)	ASG-711 (ASG-703)

7. ADJUSTMENTS

FM Tuner Section

- Connect the FM signal generator (FM SG) to the FM ANTENNA 300Ω terminal through a 300Ω dummy antenna.
- Set the AUTO/MANUAL switch to the MANUAL position and the FUNCTION switch to the FM.

FM MONO ADJUSTMENT

Step	FM SG (1 kHz±75 kHz dev.)		Frequency display	Adjustment point	Adjustment procedure
	Frequency	Level			
1	No signal		87.5 MHz	—	Check pin 73 (3.4±1.5V) of tuner assembly.
2			108.0 MHz		Check pin 73 ($8.7^{+2.5V}_{-2.0V}$) of tuner assembly.
3	98 MHz	20~30 dB	98 MHz	T401, L402 T402	Set the output from pin 74 of tuner assembly to maximum level.
4	98 MHz	60 dB	98 MHz	T405	Adjust voltage across pins 76 and 77 of tuner assembly to T meter center. (±10 mV)
5	98 MHz	60 dB	98 MHz	T406	Minimize distortion.
6	Repeat steps 4 and 5 until both specification ratings are satisfied.				

FM MPX ADJUSTMENT

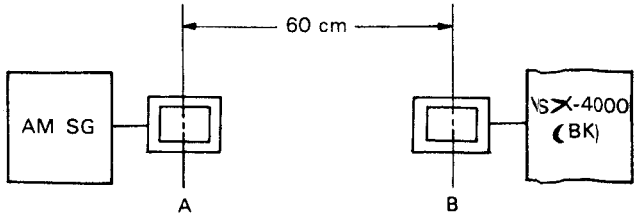
7	98 MHz	80 dB	98 MHz	VR401	Adjust the frequency at pin 75 of tuner assembly to 75.8 kHz (±100 Hz)
	No modulation				
8	98 MHz	60 dB	98 MHz	T402	Minimize distortion in both left and right channel outputs (adjust T402 to within ±90°)
	Stereo modulation*				
9	98 MHz	60 dB	98 MHz	VR402	Maximize separation.
	Stereo modulation*				
10	98 MHz	10 dB	98 MHz	—	Confirm that TUNER IND and STEREO IND are extinguished.
	Stereo modulation*				
* Stereo modulation: Main 1 kHz L+R ±68.25 kHz dev. Pilot 19 kHz ±6.75 kHz dev.					

AM (MW) Tuner Section

- Connect loop antenna to the AM signal generator (AM SG). and connect the Loop antenna (of the set) to AM ANTENNA terminal.
- Set the FUNCTION switch to the AM (MW) .

Step	AM SG (400Hz, 30% MOD)		Frequency display	Adjustment pint	Adjustment procedure
	Frequency	Level			
1	No signal		531 kHz	L406	Set pin 73 of tuner assembly to 1.2V (±0.05V)
2			1602 kHz	TC402	Set pin 73 tuner assembly to 10.0V (±0.1V)
3	Repeat steps 1 and 2 until both specification ratings are satisfied.				
4	603 kHz	40 dB	603 kHz	T404	Set the output from pin 74 of tuner assembly to maximum level.
5	1395 kHz	40 dB	1395 kHz	TC401	
6	Repeat steps 4 and 5 until both specification ratings are satisfied.				
7	999 kHz	55dB	999kHz	Confirm that TUNER IND becomes lit.	

- The distance between AM SG side loop antenna A and the receiver side (VSX-4000(BK)) loop antenna B, that is, from the center of A side loop antenna to that of B side loop antenna should be 60 cm.



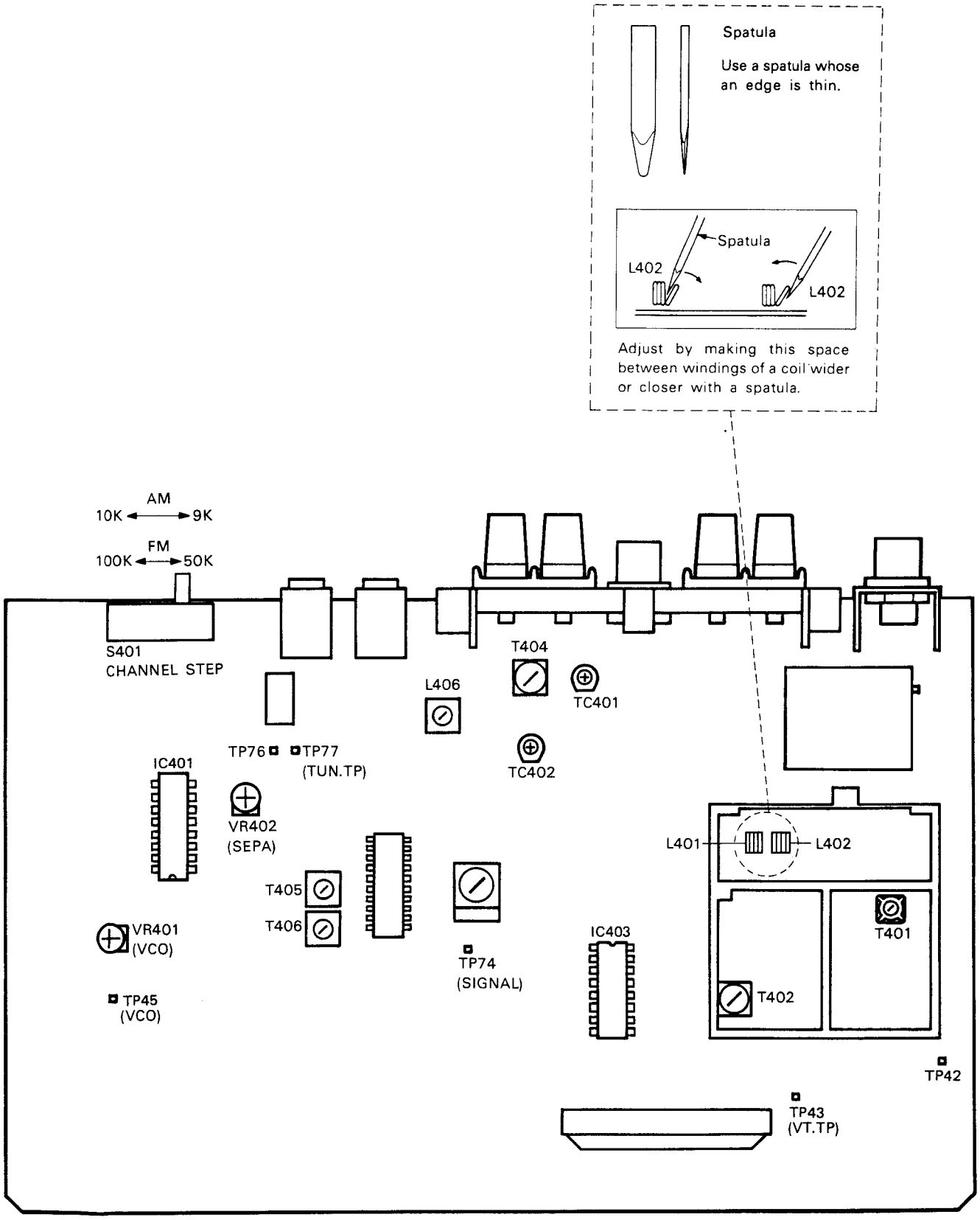


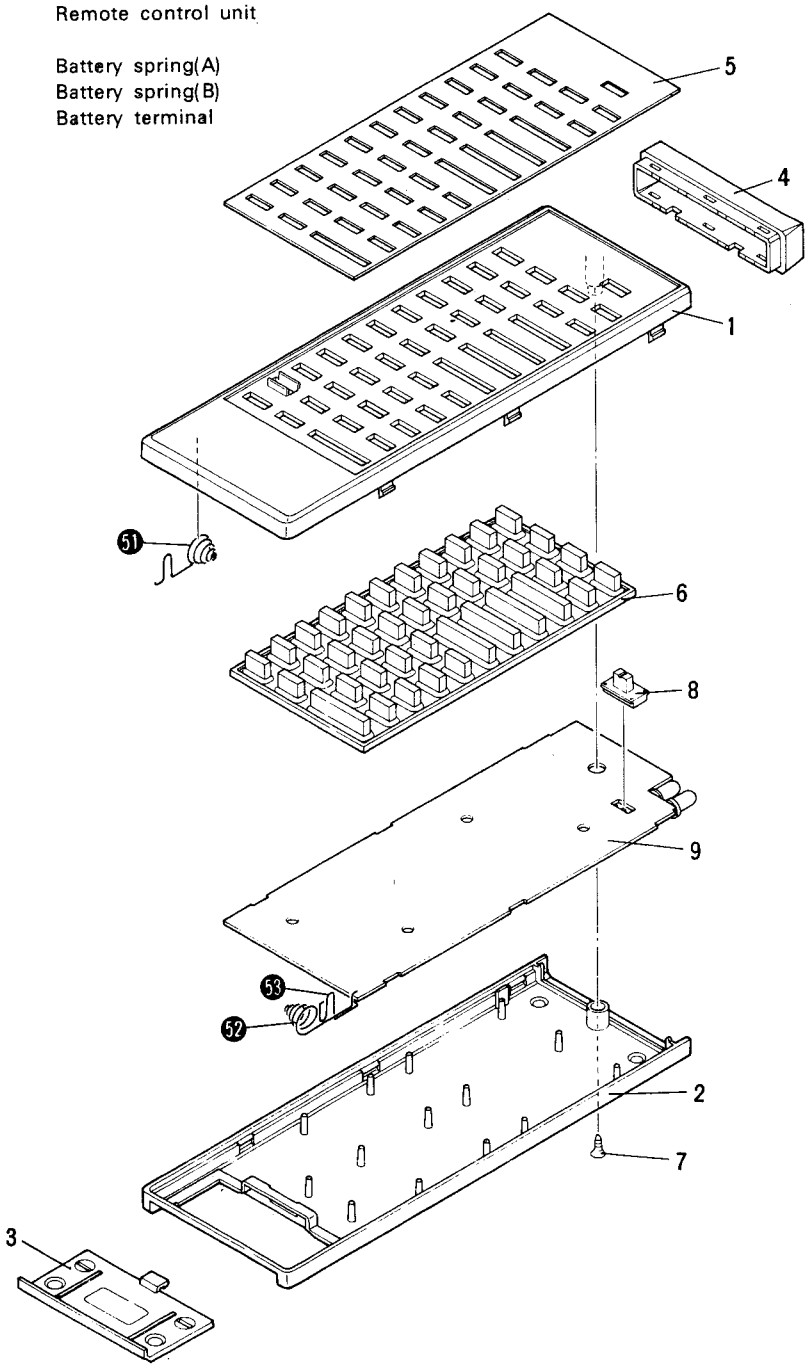
Fig. 7-1 Adjustment points

8. REMOTE CONTROL UNIT

8.1 EXPLODED VIEW

Parts List

Mark	No.	Part No.	Description
	1	AZH1019	Case(A)
	2	AZH1016	Case(B)
	3	AZH1017	Case(C)
	4	AZN1200	Filter
	5	AZA1037	Plate
	6	AZA1036	Rubber switch
	7	AZB1057	Screw
	8	AZS1021	Knob(POWER)
	9		Remote control unit
	51		Battery spring(A)
	52		Battery spring(B)
	53		Battery terminal



8.2 ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	*56 × 10¹*	*561 .....*	*RD¼PS 5 6 1 J*
47kΩ	*47 × 10³*	*473 .....*	*RD¼PS 4 7 3 J*
0.5Ω	*0R5 .....*		*RN2H 0 R 5 K*
1Ω	*010 .....*		*RS1P 0 1 0 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621 ....*	*RN¼SR 5 6 2 1 F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Remote control unit Assembly (ADX1007)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC1	PD5039
★★	Q1	2SC2021
★★	Q2	2SC2673
★	D1, D2 LED	SE303A

SWITCH

Mark	Symbol & Description	Part No.
★★	SW1 Slide switch (POWER)	SSSS21507

CAPACITORS

Mark	Symbol & Description	Part No.
	C1	CEJA470M6
	C3, C4	CCDSL101J50
	C5	CKDYB472K59

RESISTORS

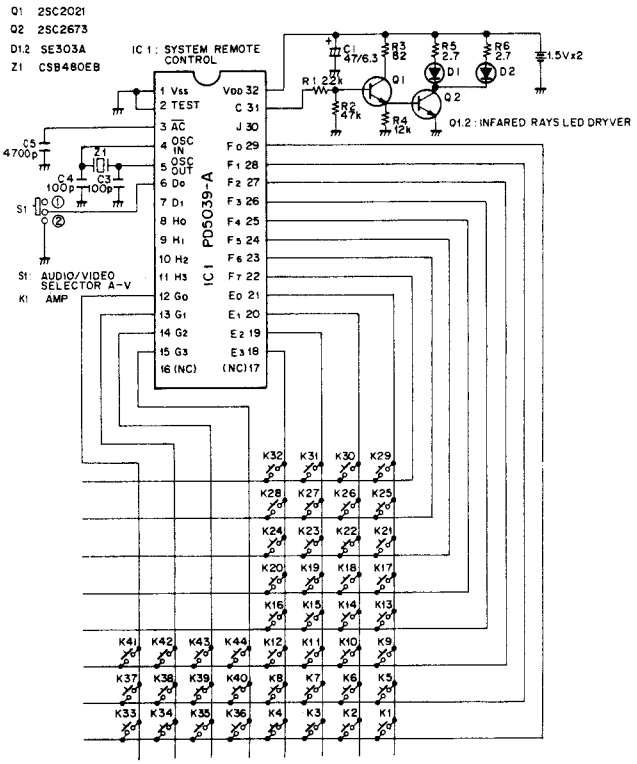
NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R5, R6	RD1/8PM2R7J
	Other resistors	RD1/8PM□□□J

OTHER

Mark	Symbol & Description	Part No.
★	X1 Ceramic resonator	CSB480EB

8.3 SCHEMATIC DIAGRAM



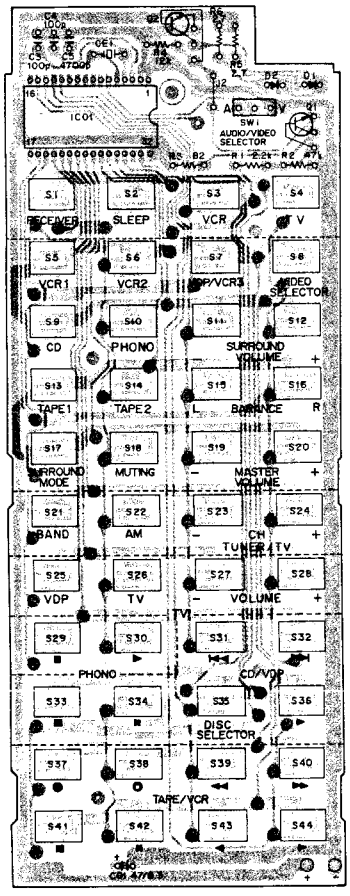
NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.

1. RESISTORS:
   Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance
2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
   ⌐¬; DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
   ⇦ mA; DC current at no input signal
   mV; Signal voltage at FM 400 Hz ± 75 kHz DEV.
4. OTHERS:
   ➡ ; Signal route.
   ⊘ ; Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts unmbers.
   The underlined indicates the switch position.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

THE UNDERLINED INDICATES THE SWITCH POSITION

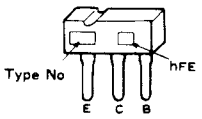
8.4 P.C. BOARD PATTERN



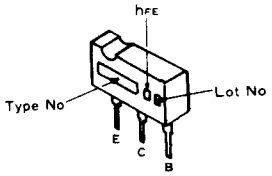
Key No.	SW No.
K1	S1
K2	S2
K3	S3
K4	S4
K5	S5
K6	S6
K7	S7
K8	S8
K9	S9
K10	S10
K11	S11
K12	S12
K13	S13
K14	S14
K15	S15
K16	S16
K17	S17
K18	S18
K19	S19
K20	S20
K21	S21
K22	S22
K23	S23
K24	S24
K25	S25
K26	S26
K27	S27
K28	S28
K29	S29
K30	S30
K31	S31
K32	S32
K33	S33
K34	S34
K35	S35
K36	S36
K37	S37
K38	S38
K39	S39
K40	S40
K41	S41
K42	S42
K43	S43
K44	S44

External Appearance of Transistors and ICs

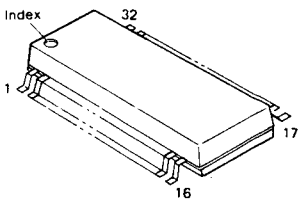
2SC2021



2SC2673



PD5039



9. FOR S/G TYPE

CONTRAST OF MISCELLANEOUS PARTS

The VSX-4000(BK)/S/G type is the same as the VSX-4000(BK)/KUC type except for following sections.

Mark	Symbol & Description	Parts No.		Remarks
		VSX-4000(BK) KUC type	VSX-4000(BK) S/G type	
⚠ ★★	S2 Line voltage selector (A)	.....	AKX1004	
⚠ ★★	S3 Line voltage selector (B)	.....	AKX-507	
⚠ ★★	FU1 Fuse (8A)	AEK-304	.....	
⚠ ★★	FU1, FU2 Fuse (4A)	.....	AEK-100	
⚠	AC Power cord			
	(AC120V)	ADG-089	.....	
	(AC110V/120V/220V/240V)	.....	ADG-087	
⚠ ★	T1 Power transformer			
	(AC120V)	ATS1033	.....	
	(AC110V/120V/220V/240V)	.....	ATS1034	
⚠ ★	T2 Power transformer			
	AC120V)	ATT1016	.....	
	(AC110V/120V/220V/240V)	.....	ATT1017	
	Packing case	AHD1103	AHD1104